Sheth NKTT College of Commerce and Sheth JTT College of Arts, Thane

(Autonomous)

(Affiliated to University of Mumbai)

Credit Structure as per NEP-2020 (w.e.f. 2024-25)

F.Y. B.Sc. (Data Science)

	Semester I Subjects	Credits		Semester II Subjects	Credits
Major BDI101 BDD102	1. Introduction to Programming Using Python 2. Descriptive Statistics	2 2	BDR201 BDP202	1. R-Programming 2. Probability and Distribution	2 2
Major BDIDP103	1.Introduction to Programming Using Python Practical and Descriptive Statistics Practical	2	BDRPP203	1.R-Programming and Probability & Distribution Practical	2
Minor	-	-	BDC204	Calculus	2
BDA104 BDE105	OE 1: Basic Accounting and Practices OE2: Business Economics	2 2	BDF205 BDD206	OE1: Financial Markets OE2: Digital Marketing	2 2
BDO106 BDOP107	VSC: Object oriented programming SEC: Object oriented Programming Practical	2 2	BDM207 BDMP208	VSC: Database Management System SEC: Database Management System Practical	2 2
BWD108 BDG109 BDK110	AEC: Corporate communication-I VEC: Green Technology-I IKS: Evolution of IT	2 2 2	BWD209 BDG210	AEC: Corporate communication-II VEC: Green Technology-II	2 2
BDS1011 BDL1011 BDP1011	CC: NSS/Sports/Culture/Yoga	2	BDS2011 BDL2011 BDP2011	CC: NSS/Sports/Culture/Yoga	2
	Total	**22**		**Total**	**22**

VISION: COMMITTED AND PERSUASIVE EFFORTS TOWARDS HOLISTIC EDUCATION

Programme Name: **FYB.Sc.(Data Science)**	**Semester: II**
Course Category/Vertical: Major	
Name of the Dept**: Science and Technology**	
Course Title: **R Programming**	
Course Code: **BDR201**	Course Level:4.5
Type: Theory	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1: Master the use of the R interactive environment and expanding by installing R packages

2: Read Structured Data into R from various sources

3: Import & Export data to & from R

4: Understand basic graphical function

Course Outcomes:

After completion of the course, learners would be able to:

CO1: Understand R Studio and explore the features & functions of R programming

CO2: Work with import and use the data and represent the data into tables, manipulating Data Frames & plot the graph using basic graphical function

Description the course:	R programming is highly relevant in various industries and fields due to its robust statistical and data analysis capabilities. This introductory R programming course insights into its relevance and demand in the industry.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Getting started with R:** R Software Getting started: R as a big calculator, Assignment, Basic operators **R Interfaces** - Example Datasets in R, R Packages, installing new R libraries, Customizing R Start-up Objects in R: Using ls and rm to managing R Objects, Types of R Objects, attributes of object,Creating, accessing, modifying objects **Introduction to programming and writing Functions in R:** Functions, Conditional statements (if, ifelse, switch), Repetitive execution: For and While loops, The Apply Functions	15
II	**Reading and writing data to and from R**: Importing and reading text files data into RStudio, Importing data using R command read.table(), Exercise, Importing text files Using scan(), Parsing each line – Redlines, Writing Data table from R, Exercise, Importing Data from other Software, Reading data from Excel into R **Introduction to graphics in R:** The R function plot(), Customize plot with low-level plotting commands, **Advanced Graphics**: Advanced plotting using Trellis; ggplots2, Lattice, Examples that Present Panels of Scatterplots using xyplot() **Importing Data- readr**, Reformatting Tables – tidyr, **Manipulating Data Frames – dplyr**: Selecting Columns, Filter, Sorting, Modifying Data Frames	15
	Total Hours	**30**

References:

1. Introduction to Programming and Statistical Modelling in R,Aedin Culhane, HARVARD SCHOOL,1st Edition 2013
2. Statistics - An introduction using R. John Wiley, Crawley, M. J. (2006).,London
3. R Data Science Quick Reference, Thomas Mailund Apress 1st Edition 2019
4. THE BOOK OF R, Tilman M. Davies No starch press 1st 2016

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ProgrammeName: **FYB.Sc.(Data Science)**	**Semester: II**
Course Category/Vertical: Major	
Name of the Dept: **Science and Technology**	
Course Title: **Probability and Distribution**	
Course Code: **BDP202** Course Level:4.5	
Type: Theory	
Course Credit: 2	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1: To explore about random variables and implement various distribution functions, to familiarize with concepts of probability.

2: Learn and implement the concept of expectation, related theorems, to know the concept and implementation of discrete distributions including Bernoulli, Binomial distributions to get acquainted with theory and practical implementation of concepts of continuous distributions.

Course Outcomes:

CO1: After completion of the course, a student should be able to use discrete and continuous probability distributions, mean and variance.

CO2: Understand the concept of Mathematical Expectation and its properties, Different theoretical discrete distributions like Binomial, Bernoulli's, Poisson's and different theoretical continuous distribution like Uniform, Normal, Gamma, and Exponential.

Description the course:	Probability Distribution is one of the importatnt concept in statistics. It has huge applications in business, Finance Investing science and other sectors. It is majorly used to make future predictions based on a sample for a random experiment.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Theory of Probability:** Introduction, History, Different terms Axiomatic approach to probability, Mathematical notation, independent events, multiplication law and conditional probability, Bayes theorem, **Random Variables and Distribution Functions:** Random Variable, distribution function, discrete random variable, continuous random variable, joint probability law.	15
II	**Mathematical Expectation:** Mathematical expectation and its properties, Expectation of a Function of a Random Variable, Addition Theorem of Expectation, Multiplication Theorem of Expectation, Conditional Expectation and Conditional Variance. **Theoretical Discrete Distributions**: Introduction, Bernoulli Distribution, Binomial Distribution, Poisson Distribution, Discrete Uniform Distribution. **Theoretical Continuous Distributions**: Rectangular or Uniform Distribution, Normal Distribution, Gamma Distribution, The Exponential Distribution.	15
	Total Hours	30

References:

Sr. No.	Title	Author/s	Publisher	Edition
1	Fundamentals of Mathematical statistics	S. C, Gupta and V. K. Kapoor	S. Chand and Sons	Tenth
2	Applied Statistics and Probability for Engineers	Douglas C. Montgomery and George C. Runger	Wiley	Sixth
3	Probability, Statistics, and Stochastic Processes	Peter Olofsson and Mikael Andersson	Wiley	second

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Programme Name: **FYB.Sc.(Data Science)**	**Semester: II**
Course Category/Vertical: Major	
Name of the Dept: **Science and Technology**	
Course Title: **R- Programming and Probability & Distribution Practical**	
Course Code: **BDRPP203** Course Level: 4.5	
Type: Practical	
Course Credit: 2	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1: Learn and implement expressions & control flow in R

2: Explore and use basic data structures & graphs in R

3: To provide students with the foundations of probabilistic and statistical analysis mostly used in varied applications in engineering and science

4: To practically learn the theory concepts and apply in real time.

Course Outcomes:

After completion of the course, learners would be able to:

CO1: Use R object, simple statistical function for data analysis.

CO2: To create Tabulation for presentation of data and operation of them and get the knowledge about various ways of plotting data

CO3: Course will make students understand to create different formulas to find probability, Conditional probability, Expected mean, variance, and standard deviation, Joint Probability in Excel.

CO4: Understand how to use and analyze statistical functions to calculate normal, Poisson's, Exponential Distribution by using excel.

Syllabus: NEP 2020 w.e.f 2024-25

Sr. No.	Content	Hours
I	**R-Programming**	
1	**Introduction to R Programming Elements**	
A	Write a R Program to implement expressions, assignment and decision making	
B	Write a R program to demonstrate the use of essential data structures in R [Hint: Vectors, Matrix, Arrays]	
2	**Using List, Data Frames and Functions in R**	
A	Write an R program to manage data and exhibit operations on it using List data structure	
B	Write an R program to manage data and exhibit operations on it using Data Frames	
C	Write an R program to demonstrate the use of : i. user-defined functions ii. built-in numeric function, character functions etc.	
3	**Implementing Strings in R**	
A	Write an R program to store and access string in R objects (vectors, matrix, arrays, data frames, and lists)	
B	Write an R program to demonstrate use of various string manipulation functions. **[Hint: paste(), print(), noquote(),format(), cat(), toString(), sprint()]**	
4	**Performing Statistics with R-I**	
A	Write an R program to apply statistical functions mean, median, mode & standard deviation etc.	
B	Write an R program to demonstrate Linear and Multiple Regression analysis.	
5	**Performing Statistics with R-II**	
A	Write an R program to implement i. Normal Distribution. [Hint: dnorm(), pnorm(), qnorm(), rnorm()] ii. Binomial Distribution: [Hint: dbinom(), pbinom(),qbinom(),rbinom()]	
B	Write an R program to perform time-series analysis for the given data.	
6	**Data Interfaces using CSV file in R**	
A	Write a R program to read CSV file with & without Row names	
B	Write a R program to Write & append to CSV file	
C	Write a R program to calculate mean, sum, count of CSV file	

7	**Data Interfaces using Excel file in R**	
A	Write a R program to import to & Export from an Excel Fil	
B	Write a R program to convert an Excel column into a list, vector, dataframe	
C	Write a R program to delete rows with empty cells from Excel	
8	**Data Visualization**	
A	Write an R program to learn about Tabulation and related concepts [Hint: Contingency Tables, Selection of Parts, Conversion, Complex Tables, Cross Tabulation]	
B	Write an R program to demonstrate various ways of performing Graphical analysis.[Hint: Plots, Special Plots, Storing Graphics]	
9	**Object Oriented Programming in R**	
A	Write an R program to demonstrate OOP concepts, the construction and use of S3 and S4 classes	
B	Write an R program to define reference class and operations on them.	
10	**Measuring Performance**	
A	Write R program to measure the performance with the help of bult-in function like mocrobechmark().	
II	**Probability Distribution**	
1.	**Discover Probability using formulas:**	
a.	Design and spreadsheet experiment to compute the probability by using formulas.	
b.	Create a spreadsheet application to compute the Conditional Probability, Independent events.	
2.	**Bayes Theorem:**	
a.	Formulate and apply Bayes' Theorem Calculations for problems like The "TwoSupplier Example".[Hint: Use Prior Probabilities and Conditional Probabilities to compute Joint and Posterior Probabilities]	
3.	**Random Variables and Distribution Function:**	
a.	Create spreadsheet application to Compute the Expected Value, Variance, and Standard Deviation of discrete and continuous random variables.	
4.	**Joint Probability Distribution:**	
a.	Create a spreadsheet application to implement joint probability law.	
b.	Create a spreadsheet application to calculate the expected mean and variance for Joint probability Distribution.	
5.	**Mathematical Expectation Addition and Multiplication theorem:**	
a.	Create a spreadsheet application to verify Addition theorem of expectation.	
b.	Create a spreadsheet application to verify Multiplication theorem of expectation.	
6.	**Conditional Variance and Conditional variance:**	
A	Create a spreadsheet application to find conditional variance and conditional expectation.	
7	**Theoretical Discrete Distributions 1:**	

A	Create spreadsheet application to demonstrate Bernoulli Distribution.	
B	Create spreadsheet application to Calculate Binomial Distribution in Excel. **[Hint: Use BINOM.DIST]**	
8	**Theoretical Discrete Distributions 2:**	
A	Create a spreadsheet application to Poisson Probability Distribution. **[Hint: Use POISSON]**	
B	Create spreadsheet application to demonstrate Uniform Discrete Distribution.	
9	**Theoretical Continuous Distributions 1:**	
A	Create spread application for computing probabilities and z values for the standard normal distribution. **[Use NORMSDIST and NORMSINV]**	
B	Create spreadsheet application to demonstrate Uniform Continuous Distribution.	
10	**Theoretical Continuous Distributions 2:**	
A	Create spread application for computing probabilities for the Gamma probability distribution. **[Hint: Use GAMMA.DIST]**	
B	Create spread application for computing probabilities for the exponential probability distribution. **[Hint: Use EXPONDIST].**	
	Total Hours	**60**

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Programme Name: **FYB.Sc.(Data Science)**	**Semester: II**
Course Category/Vertical: Minor	
Name of the Dept: **Science and Technology**	
Course Title: **Calculus**	
Course Code: **BDC204**	Course Level:4.5
Type: **Theory**	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1. To give the insight of calculus starting with continuity and derivatives.
2. To gain proficiency in integration.

Course Outcomes:

CO1. Quickly and easily find the derivative of a function.

CO2. Performing the integration of functions with ease

Description the course:	The course introduces learners to understanding the sudden changes or spikes in the data by calculating its derivative and integration can then be applied to smooth the data by averaging or filtering out these fluctuations.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Continuity and Derivatives:**Limits at Infinity;Horizontal Asymptotes, Derivatives and Rates of Change, The Derivative as a Function. **Differentiation rules**: Derivatives of Polynomials and Exponential Functions, The Product and Quotient Rules, The Chain Rule, Implicit Differentiation, Derivatives of Logarithmic Functions, Rates of Change in the Natural and Social Sciences, Exponential Growth and Decay, Related Rates, Linear Approximations and Differentials, Hyperbolic Functions	**15**
II	**Integrals:** Areas and distances, The Definite Integral, The Fundamental Theorem of Calculus, Indefinite Integrals and the Net Change Theorem, The Substitution Rule, Integration by Parts, Trigonometric Integrals, Trigonometric Substitution, Integration of Rational Functions by Partial Fractions, Strategy for Integration, Integration Using Tables and Computer Algebra Systems, Approximate Integration, Improper Integrals.	**15**
	Total Hours	**30**

References:

(1) Calculus– Early Transcend entals James Stewart Thomson 6 th edition 2008.

(2) Calculus and Analytical Geometry by George B.Thomas Jr. , RossL. Finney M aurice D.Weir Addision Wesley Publishing Company 1998

(3) Schaum's 3000 Solved Problems in Calculus Elliot Mendelson Tata Mc Graw Hill s1988

Programme Name: **FYB.Sc.(Data Science)**	**Semester: II**
Course Category/Vertical: Open Elective	
Name of the Dept: **Science and Technology**	
Course Title: **Financial Markets**	
Course Code: **BDF205**	Course Level: 4.5
Type: Theory	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1: To provide students with the complete understanding of Indian financial Markets and its evolution. 2: To give an overview of financial markets, its classification and importance	
Course Outcomes: **CO1:** After the successful completion of the course the student will have Knowledge about Indian financial Markets as well as a brief understanding of financial systems in other nations. **CO2:** Students will be aware about financial markets and its types.	
Description the course:	Basic Knowledge of Indian Financial Market, Types and Understanding of Financial System

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Module-1: Indian Financial System And Financial Markets** An introduction to the financial system, Components of Financial System Financial Markets, Definition, Functions Classification: Primary Market & Secondary Market Financial Markets Structure, Financial instruments	15
II	**Module-2: Commodity And Derivative Market** Introduction to Commodities Market - Meaning History & Origin, Types of Commodities Traded, Structure of Commodities Market in India Participants in Commodities Market, Introduction to Derivatives Market – Meaning, Elements of a Derivative Contract, Types of Derivatives, Types of Underlying Assets Participants in Derivatives Market, Difference Between Forwards & Futures	15
	Total Hours	**30**

References:
- Financial Services and Markets By Dr. S. Gurusamy- Thomson Publication
- Banking & Financial Markets in India By Niti Bhasin - New NC Century
- Indian Financial System By Dr. S. C. Bihari - International Book House Pvt Ltd
- Financial Institutions And Markets By Bhole and Mahakud – Mc Graw Hill

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Programme Name: **FYB.Sc.(Data Science)**	**Semester:II**
Course Category/Vertical: Open Elective	
Name of the Dept: **Science and Technology**	
Course Title: **Digital Marketing.**	
Course Code**: BDD206**	Course Level:4.5
Type: Theory	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1: To acquaint the students with the knowledge of growing integration between the traditional and digital marketing concepts and practices in the digital era 2: To familiarize the students with the tools and techniques used by the digital marketers for driving the marketing decisions to attain marketing objectives.	
Course Outcomes (OC): CO1: Students will be able to understand the concept of digital marketing and its integration with traditional marketing as well as examining various tactics for enhancing a website's position and ranking with search engines. CO2: Students will be able to understand social media marketing and apply the learnings to create digital media campaigns.	

Description the course:	Digital marketing comprises all marketing efforts that use the Internet. These include digital channels such as search engines, email, websites, social media, etc., that can be used to connect with current and prospective customers.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**1.Introduction to digital marketing**- Meaning of Digital Marketing, Differences from Traditional Marketing, Return of Investments on Digital Marketing vs. Traditional Marketing, E Commerce, Tools used for successful marketing, SWOT Analysis of Business for Digital Marketing, Meaning of Blogs, Websites, Portal and Their Differences, Visibility, Visitor Engagement, Conversion Process, Retention, Performance Evaluation. **2.Search Engine Optimization (SEO):** On page Optimization Techniques, Off Page Optimization Techniques, Preparing Reports, Creating Search Campaigns, Creating Display Campaigns. Social Media Optimization (SMO): Introduction to Social Media Marketing, Advanced Facebook Marketing	15
II	**1.Word press Blog Creation:** Twitter Marketing, LinkedIn Marketing, Instagram Marketing, social media Analytical Tools. Search Engine Marketing: Meaning and Use of Search Engine Marketing, Tools used — Pay Per Click, Google Adwords, Display Advertising Techniques, Report Generation **2.Website Traffic Analysis, Affiliate Marketing and Ad Designing:** Google Analytics, Online Reputation Management, EMail Marketing, Affiliate Marketing, Understanding Ad Words Algorithm, Advertisement Designing	15
	Total Hours	**30**

References:
1. Digital Marketing by Seema Gupta Mcgraw Hill
2.Internet Marketing: A practical approach in the Indian context: Oxford Publishing
3. Digital Marketing: Strategy, Implementation & Practice – Dave Chaffey & Fiona Ellis
4. Art of SEO (3rd edition) – Eric Enge

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Programme Name: FYB.Sc. (Data Science)	Semester:II
Course Category: Vocational Skill Course	
Name of the Dept: **Science and Technology**	
Course Title: **Database Management System**	
Course Code: **BDM207** Course Level:4.5	
Type: Theory	
Course Credit: 2	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1. The objective of the course is to present an introduction to fundamentals of database management systems.

2. To learn how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS

Course Outcomes:

CO1: Understand Database as s Relational model for Organizing, structuring, storing of data and SQL to retrieve data.
CO2: To understand creation, manipulation and querying of data in databases.

Description the course:	"Database Management System" introduces learners to the fundamental principles and practices of organizing, storing, and accessing data efficiently. This course provides a comprehensive overview of database concepts, including relational database design, SQL querying, normalization, and indexing. Participants will gain practical skills in designing, implementing, and managing databases to meet the information needs of businesses and organizations

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Introduction:** Why Databases? Data versus Information, Introducing the Database, Role and Advantages of the DBMS, Types of Databases **Entity Relationship Model:** Conceptual modelling and database design: Data modelling using the Entity Relationship model (ER). The enhanced entity relationship model. Relational database design by ER and EER model. Practical database design methodology and use of UML diagrams. **Normalization of Database Tables:** Database Tables and Normalization, The Need for Normalization, The Normalization Process, Improving the Design, Surrogate Key Considerations, HigherLevel Normal Forms, Normalization and Database Design, Denormalization, Data-Modeling Checklist	15
II	**Structured Query Language (SQL):** Introduction to SQL, Basic SELECT Queries, SELECT Statement Options, FROM Clause Options, ORDER BY Clause Options, WHERE Clause Options, Aggregate Processing, Subqueries, SQL Functions, Relational Set Operators, Crafting SELECT Queries **Advanced SQL**: Data Definition Commands, Creating Table Structures, Altering Table Structures, Data Manipulation Commands, Virtual Tables: Creating a View, Sequences, Function and Procedural SQL. **Transaction Management and Concurrency Control**: What Is a Transaction? Concurrency Control with Locking Methods, Concurrency Control with Time Stamping Methods, Concurrency Control with Optimistic	15
	Total Hours	**30**

References:

1. Fundamentals of Database systems. Ramez Elmasri, Shamkant B Navathe Pearson. 6th Edition.

2. Database Management Systems, Ramakrishnam, Gehrke, McGraw- Hill, 2007

3. The Programming Language of Oracle, 4th Revises Edition, Ivan Bayross

4. Oracle PL/SQL Programming, Steven Feuerstein with Bill Pribyl

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Programme Name: FYB.Sc. (Data Science)	Semester:II
Course Category: Skill Enhancement Course	
Name of the Dept: **Science and Technology**	
Course Title: **Database Management System Practical**	
Course Code: **BDMP208** Course Level:4.5	
Type: Practical	
Course Credit: 2	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

The objective of the course is to present an introduction to fundamentals of database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS

Course Outcomes:

CO1 - Understand Database as s Relational model for Organizing, structuring, storing of data and SQL to retrieve data.

CO2 - To understand creation, manipulation and querying of data in databases.

Description the course:	"Database Management System" introduces learners to the fundamental principles and practices of organizing, storing, and accessing data efficiently. This course provides a comprehensive overview of database concepts, including relational database design, SQL querying, normalization, and indexing. Participants will gain practical skills in designing, implementing, and managing databases to meet the information needs of businesses and organizations.

Unit No.	Content	Hours
1.	**List of Practical: (Can be done in Oracle / SQL Server / MySQL)**	
a	Draw E-R diagram and convert entities and relationships to relation table for a given scenario: Bank	
b	College	
2	**Write relational algebra queries for a given set of relations**	
3	**Defining data**	
a	Using CREATE statement	
b	Using ALTER statement	
c	Using DROP statement	
d	Using TRUNCATE statement	
e	Using RENAME statement	
4	**Manipulating data**	
a	Using INSERT statement	
b	Using UPDATE statement	
c	Using DELETE statement	
d	Using SELECT statement	
5	**Creating and managing the tables**	
a	Creating table with contraints: NOTNULL, UNIQUE, PRIMARY KEY , FOREIGN KEY	
6	**Restricting and sorting data**	
a	Using DISTINCT, IN, AS, SORT, LIKE, ISNULL, OR	
b	Using Group By, Having clause, Order By clause	
7	**Aggregate and Mathematical functions**	
a	AVG, MIN, MAX, SUM, COUNT	
b	ABS, SQRT, ROUND, TRUNCATE, SIGN, POWER, MOD, FLOOR, CEIL	
8	**Views and Joins: For a given set of relation tables perform the following**	
a	Creating view	
b	Dropping view	
c	Selecting from a view	
9	**Database trigger**	
a	Using CREATE OR REPLACE TRIGGER	
10	**Functions and Procedures.**	
	Total Hours	**60**

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Programme Name : FYB.Sc. (Data Science)   Semester: II

Course Category/Vertical: Ability Enhancement Course
Name of the Dept: **Science and Technology**
Course Title: **Corporate Communication-II**

Course Code: **BWD209**	Course Level: 4.5

Type: Theory
Course Credit: 2 credits
Hours Allotted: 30 Hours
Marks Allotted: 50 Marks

Course Objectives:

1: To inculcate the knowledge of basic communication skills in learners and make learners aware of how non-verbal communication impacts daily communication.

2: To inculcate effective business writing skills in learners and create awareness about ethics in information

Course Outcomes:

CO1: Learners would develop their basic communication skills and gain knowledge of how verbal and non-verbal communication impacts the business world.

CO2:   Develop effective business writing skills

Description the course:	The course introduces learners to the basic concepts of communication required in personal and professional lives. It will assist them in making effective use of both verbal and non-verbal methodologies of communication. The course will inculcate effective writing skills in learners enabling them to overcome the communication challenges they may face in the corporate world. With these skills they can turn out to be communication experts and PR experts as well.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Introduction to Soft Skills – I** **Soft skills** – Meaning, features, scope, importance, relevance of soft skills in the corporate world, relevance of soft skills in personal space, Soft skills v/s hard skills **Listening skills** – Meaning, Importance, Essentials of good listening skills, Qualities of a good listener, Types of listening skills, Barriers to effective listening, Process of listening, Active v/s Passive Listening **Leadership** – Meaning, Attributes of a good leader, Styles of leadership, Leading through change	15
II	*Personality Development and Etiquettes* **Personality** – Meaning, Determinants of personality, Personality Traits – Locus of Control, Type A and Type B Personality, Machiavellianism, Self-Monitoring **Time Management** – Meaning, Importance, principles of time management, 4 P's, 4D's of time management, Challenges in time management, Tips for good time management. **Etiquettes** – Meaning, Importance, Ethics v/s Etiquettes. **Types of Etiquettes** – Telephone Etiquettes, Email Etiquettes, Meeting Etiquettes, Dining Etiquettes, Cubicle Etiquettes, Dressing and Grooming Etiquettes, Social media Etiquettes, Internet Etiquettes, Workplace Etiquettes	15
	Total Hours	**30**

References:

1. Daniel Coleman, Emotional Intelligence, Bantam Book, 20 ICT Academy of Kerala, "Life Skills for Engineers", McGraw Hill Education (India) PrivateLtd.,2016.

2. Caruso, D. R. and Salovey P, "The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership", John Wiley & Sons, 2004.

3. Kalyana, "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd,

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Programme Name: **B.Sc. (Data Science)**	**Semester:II**
Course Category/Vertical: Value Education Course	
Name of the Dept: **Science and Technology**	
Course Title: **Green Technology – II**	
Course Code: **BDG210**	Course Level:4.5
Type: Theory	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1.Understand issues and modern approaches of Green Computing and alternatives for cooling your data center and the need for making computer networks and communications energy efficient.

2.Understand cloud computing in the context of environmental sustainability and various elements of clouds that contribute to total energy consumption

Course Outcomes:

CO1. Develop knowledge about the concept green IT standards and certifications related to sustainable IT products as well as Describe green IT in relation to technology.

CO2. Evaluate IT use in relation to environmental perspectives and Formulate plans for reducing IT heating and cooling requirements as well as Implement Green IT in Real Life

Description the course:	The course introduces the learners to the concept of sustainable approach to IT resource management, focusing on minimizing environmental impact in the context of environmental concerns. The learners could upgrade their current understanding towards Green IT practices, reducing energy consumption and electronic waste, promoting efficient, cost-effective, and environmentally sustainable IT systems. Students would be able to explore new areas of IT professionals with expertise in Green IT.

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	•**Overview and Issues:** Problems: Toxins, Equipment Disposal, Company's Carbon Footprint: Measuring, Global Initiatives: United Nations, Basel Action Network, Basel Convention, North America: The United States, Canada, Australia, Europe, WEEE Directive, RoHS, National Adoption, Asia: Japan, China, Korea. •**Minimizing Power Usage:** Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Power Consumption, Reducing Power Use, Data De-Duplication, Virtualization, Monitors, Power Supplies, Wireless Devices	15
II	•**Cooling:** Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Datacentre Design, Centralized Control, Design for Your Needs. **Green Networks and Communications :** Introduction, Objectives of Green Network Protocols, Green Network Protocols and Standards. •**Green Cloud Computing and Environmental Sustainability:** Introduction, What is Cloud Computing?, Cloud Computing and Energy Usage Model: A Typical Example, Features of Clouds Enabling Green Computing, Green Cloud Architecture	15
	Total Hours	30

References:

Green IT Toby Velte, Anthony Velte, & Robert Elsenpete McGraw Hill 2008

Harnessing Green It Principles And Practices San Murugesan, G.R. Gangadharan WILEY

Green Computing Tools and Techniques for Saving Energy, Money and Resources Bud E. Smith CRC Press 2014

Scheme of Examination

Course with Credit	External Examination	Internal Examination	Total
Credit 4	60 marks	40 marks	100 marks
Credit 2	30 marks	20 marks	50 marks

Internal Examination Structure(Theory)

Internal examination	40 marks	20 marks
Project Presentation/Case Study /Quiz/Group Discussion	10 marks	5 marks
Assignment /Active class Participation/Attendance	10 marks	5 marks
Class test	20 marks	10 marks
Total	40 marks	20 marks

Structure for Class Test

For 10 marks	
Q1. Fill in the blank (5 Marks) a. b. c. d. e. **Q2. Answer in one or two lines (5 Marks)** a. b. c. d. e.	**10 Marks**

External Examination (For 60 Marks)

Q. No.	External	Marks: 60
Q .1 (From Module 1)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 2 (From Module 2)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 3 (From Module 3)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 4 (From Module 4)	Answer the following questions (Any 3) A B C D E F	15 Marks

External Examination (For 30 Marks)

Q. No.	External	Marks: 30
Q .1 (From Module 1)	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 2 (From Module 2)	Answer the following questions (Any 3) A B C D E F	15 Marks

Practical Exam Evaluation: 50 Marks

A Certified copy journal is essential to appear for the practical examination.

1	Practical Question 1	20
2	Practical Question 1	20
3	Journal	5
4	Viva Voce	5