

**K.L.E. Society's**  
**Raja Lakhamagouda Science Institute (Autonomous), Belagavi**  
**Department of Data Sciences**  
**B.Sc. II Semester (2023-2024)**

<b>23DS201: Python Programming (Core)</b>	
Total No of Teaching Hrs.: 56	Teaching Hrs. Per Week: 4
Credits: 4	Max. Marks: 100

**Unit I: Hours:14**

**Introduction to Python**

Working with Python, Variables, expressions, and statements, Accepting user input, Conditional execution, Alternative execution, Chained conditionals, Nested conditionals, Iteration, Function basics - Built-in functions, Declaring and calling user-defined functions, Parameters and default arguments, Fruitful functions and void functions, Recursion, Scope: Global and local variables, Modules: Creating and importing modules, importing all or specific classes from modules

**Unit II: Hours:12**

**Python Functions and File Handling**

Lambda functions as objects, map() function, Strings - indexing and slicing, Built-in string methods, Lists, Dictionaries and tuples, Files: Opening the file - modes: read, write, append, Reading from and writing to a file, Closing and deleting a file

**Unit III: Hours:14**

**Python Exception Handling and Object-Oriented Programming**

Exception: Exceptions in Python, Handling exceptions: try block, except block, else block, finally block, Raising an exception, User-defined exception, Assertions, Object-Oriented Programming: Classes - defining classes with init() and methods, creating objects, Class variables and instance variables, Inheritance with the super() function

**Unit IV: Hours:16**

**Python Regular Expressions, Threading, and GUI**

Regular Expressions: Concept of regular expression, meta characters, using match() function, search(), findall(), sub(), and split() functions, Threading in Python: Creation and execution of threads using the threading module, Use cases, GUI in Python: GUI Programming in Python (using Tkinter) - Introduction to GUI library, Layout management with pack, grid, and place, Widgets with their attributes: Frame, Label, Button, Checkbutton, Radiobutton, Entry, Listbox, Text, Events and bindings, Drawing on canvas (line, oval, rectangle, arc)

**Textbooks:**

1. Gowrishankar S. and Veena A., "Introduction to Python Programming," 1st Edition, CRC Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372.
2. John V. Guttag, "Introduction to Computation and Programming Using Python," Prentice Hall of India.

**Reference Books:**

1. Charles R. Severance, "Python for Everybody: Exploring Data Using Python 3," 1st Edition, CreateSpace Independent Publishing Platform, 2016.
2. Paul Gries, Jennifer Campbell, Jason Montojo, "Practical Programming: An Introduction to Computer Science Using Python 3," Pragmatic Bookshelf, 2nd Edition.
3. Lukaszewski, "MySQL for Python: Database Access Made Easy," Pact Publisher.
4. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist," 2nd Edition, Green Tea Press, 2015.
5. Magnus Lie Hetland, "Beginning Python: From Novice to Professional."

## **Python Programming Lab**

**Course Code: 23DS202**

**No of Lecture ours/Week:4**

**Max Marks: 50**

**Credit: 2**

**Course Objectives/Course Description**

To learn problem solving through procedural language programming technique and Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.

**Learning Outcome**

Through this practical Python programming course, students will acquire the skills to:

- Solve algorithmic problems efficiently.
- Effectively utilize Python modules and classes for code organization and object-oriented programming.
- Master multithreading and exception handling techniques.
- Proficiently work with regular expressions and design graphical user interfaces (GUIs) in Python.

Sl. No	Content
1.	Write a Python function to calculate the factorial of a non-negative integer. The function accepts the number as an argument.
2.	Write a Python program to get the sum of digits of a non-negative integer.
3.	Write a Python program to create a module `Calculation.py` that contains functions to perform basic arithmetic operations. Demonstrate importing the module
4.	Write a Python program to read a file line by line and store it into an array.
5.	Write a Python GUI program to design a Student Registration Form using any 5 widgets
6.	Write a Python program to illustrate multithreading
7.	Write a Python class named Circle, constructed by a radius, and two methods which will compute the area and the perimeter of a circle.
8.	Write a Python class named Rectangle, constructed by a length and width, and a method which will compute the area and perimeter of the rectangle. Inherit a class Box that contains an additional method, volume. Override the perimeter method to compute the perimeter of a Box.
9.	Write a program to demonstrate the use of Regular expressions with match(), search(), findall(), sub(), and split().
10.	Write a Python program to demonstrate Exception handling using try, except, finally, and else blocks

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<b>23DS203: Introduction to Data Science (Core)</b>	
Total No of Teaching Hrs.: 56	Teaching Hrs. Per Week: 4
Credits: 4	Max. Marks: 100

**Course Outcomes:**

- Gain a comprehensive understanding of data evolution, including the types of data and the significance of ICT advancements in the context of Data Science.
- Develop a solid foundation in Data Science by distinguishing it from related fields such as Statistics and Machine Learning and exploring its key components and technology.
- Master the classification of data sets, their formats, and sources, and become proficient in performing exploratory data analysis and manipulation.
- Acquire the skills to leverage data connectivity for real-world applications, making informed data-driven decisions in business and various domains.

## UNIT 1

Hours: 12

**Data Evolution:** Data to Data Science, Understanding data: Introduction, Type of Data: Numeric, Categorical, Graphical, High Dimensional Data, Data Classification, Hot Data, Cold Data, Warm Data, Thick Data, Thin Data Development Time Line, ICT Advancement-a Perspective, Data Growth-a Perspective, IT Components-Business Process Landscape, Ven-Diagram

**Classification of digital Data:** Structured, Semi-Structured and Un-Structured. Sources of Data: Time Series, Transactional Data, Biological Data, Spatial Data, Social Network Data, Data Evolution, Data Sources

## UNIT 2

Hours: 14

**Data Science:** Data Science-A Discipline – Data Analytics – Need for Data Analytics- Data Science vs Statistics- Data Science vs Machine Learning. **Data Analytics Relation:** Data Science, Analytics, Big Data Analytics. **Data Science Components:** Data Engineering- Data Analytics-Methods and Algorithm, Data Visualization: Big Data Technology- Data Science Ontology-Data Science User-Roles and Skills - Benefits and Uses of Data Science-The Data Science Process-DataScience Use Cases.

## UNIT 3

Hours: 14

**Understanding Data Sets, Types of data sets:** structured, unstructured, and semi-structured, Real-world applications of data sets. Data Set Formats and Sources, Common data set formats (CSV, JSON, XML, etc.),

**Data sources:** databases, web scraping, APIs, Data set acquisition and preprocessing.

**Data Exploration and Analysis, EDA techniques:** summary statistics, data visualization, Identifying data patterns and anomalies, Data set profiling and cleaning.

**Data Set Manipulation, Data set operations:** filtering, sorting, aggregation, Data set transformation and feature engineering, Data set merging and joining.

## UNIT 4

Hours: 16

### Data Connectivity

Introduction to Data Connectivity, Importance in the digital age, Data integration and interoperability.

### Data Connection Technologies

Database connectivity using SQL, API integration and RESTful services.

### Data Connectivity Tools and Frameworks

Tools for data integration and connectivity, Frameworks for streamlining data access, Best practices in data connectivity.

### Real-World Data Connectivity Applications

Application of data connectivity in business, Case studies and examples, Leveraging data connectivity for informed decision-making.

## TEXT BOOKS

1. V. Bhuvaneswari, T.Devi, "Big Data Analytics: A practitioner's Approach", Scitech Publications, First Edition, 2016.
2. Seema Acharya, "Data Analytics Using R", McGraw Hill Education, First edition, 2018

## **REFERENCE BOOKS**

1. Davy Cielen, Arno D.B. Meysman, Mahamed Ali, "Introducing Data Science", Manning Publications Co., First Edition, 2016.
2. Garrett Grolemond, "Hands-On Programming with R", O' Reilly Publications, First Edition, 2014.
3. Rachel Schutt and Cathy O'Neil, "Doing Data Science", O' Reilly Publications, First Edition, 2018 (Reprint).

**K.L.E. Society's**

**Raja Lakhamagouda Science Institute (Autonomous), Belagavi**

**Department of Data Sciences**

**B.Sc. II Semester (2023-2024)**

<b>23DS204: Descriptive Statistics (Core)</b>	
Total No of Teaching Hrs.: 56	Teaching Hrs. Per Week: 4
Credits: 4	Max. Marks: 100

### **Course Objectives/Course Description**

- This course is introductory level in statistics and to introduce the historical development of statistics, classification and tabulation of data, descriptive measures and fitting mathematical curves for the data.
- This course also applies and realizes the measurement of relationship between quantitative and qualitative data and the concept of descriptive measures.

### **Learning Outcome**

C01: Understand the concept of descriptive measures.

C02: Understand the importance and applications of correlation coefficient.

C03: Learn about importance and applications of the measures of central tendency, measures of dispersion and correlation.

C04: Implement the theoretical concepts of descriptive measures for data analysis

## **UNIT-1**

**Hours:10**

### **Organization and Presentation of Data**

Origin and development of Statistics, Scope, Limitation of Statistics. Types of data: Primary, secondary, quantitative and qualitative data. Types of Measurements: nominal, ordinal, discrete and continuous data. Classification and tabulation of data. Presentation of data by tables: Construction of frequency distribution for discrete and continuous data, graphical representation of a frequency distribution by histogram and frequency polygon.

## **UNIT 2**

**Hours:10**

### **Measures of Central Tendency**

Measure of central tendency: Arithmetic Mean, Median, Mode, Geometric Mean, Harmonic Mean. Partition values: Quartiles, Deciles and Percentiles, Properties of measures of central tendency.

## **UNIT-3**

**Hours:16**

### **Measures of Dispersion**

Measures of Dispersion: Range, Mean deviation, Quartile deviation, Standard deviation, Coefficient of variation, Lorenz curve, Properties of measures of dispersion.

### **Moments**

Moments: Moments about origin, Moments about mean, Relationship between raw and central moments, Measures of Skewness, Karl Pearson's Co-efficient of Skewness, Bowley's Co-efficient of Skewness, Measures of Kurtosis.

## **UNIT-4**

**Hours:10**

### **Correlation**

Correlation: Scatter diagram, Simple correlation, Karl Pearson's coefficient of correlation, Product moment correlation, partial and multiple correlation coefficients (with only three variables), Spearman's rank correlation coefficient – Problems.

### **TEXT BOOKS:**

1. Gupta S.C and Kapoor V.K, Fundamentals of Mathematical Statistics, 11th edition, Sultan Chand & Sons, New Delhi, 2014.
2. Mukhopadhyay P, Mathematical Statistics, Books and Allied (P) Ltd, Kolkata, 2016.

### **REFERENCE BOOKS**

1. Gun, A. M., Gupta, M. K. and Dasgupta B, Fundamentals of Statistics – Vol. 1, World Press, India, 2016.

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**B.Sc. II Semester (2023-2024)**

<b>22EL211: Consumer Electronics (OEC)</b>	
Total No of Teaching Hrs.: 42	Teaching Hrs. Per Week: 3
Credits: 3	Max. Marks: 100

Course Outcomes:

- Gain proficiency in audio, video, telephony, and electronic gadgets, enabling effective operation and troubleshooting of a variety of electronic devices.
- Understand the technical principles behind the functioning of these devices, including audio and video signal processing and communication capabilities.

**Unit-1**

**Hours:10**

**Audio Systems:** PA system, Microphones, Amplifier, Loudspeakers, Radio Receivers, AM/FM, Audio Recording, and reproduction, Cassettes, CD and MP3.

**Unit-2**

**Hours:10**

**TV and Video Systems:** Television standards, BW/Colour, CRT/HDTV, video system, VCR/VCD/DVD players, MP4 players, set top box, CATV and Dish TV, LCD, Plasma and LED TV, Projectors: DLP, Home Theatres, Remote controls.

**Unit-3**

**Hours:12**

**Landline and Mobile Telephony:** Basic landline equipment, CL1, cordless intercom/EPABX system, mobile phones: GPRS and Bluetooth, GPS Navigation system, smart phones, Office Equipment: Scanners, Barcode / flat bed, printers, Xerox, Multifunction units (Print, Scan, fax, and copy)

**Unit-4**

**Hours:10**

**Electronic gadgets and Domestic Appliances:** Digital Clock, Digital Camera, Handicam, Home security system, CCTV, Air conditioners, Refrigerators, washing machine / Dish washer, Microwave oven, Vacuum cleaners.

**Suggested Books:**

1. R.P.Bali, Consumer Electronics, Pearson Education (2008)
2. R.G. Gupta, Audio and Video systems, Tata McGraw Hill (2004)

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**B.Sc. II Semester (2023-2024)**

<b>22CS211: Web Designing (OEC)</b>	
Total No of Teaching Hrs.: 42	Teaching Hrs. Per Week: 3
Credits: 3	Max. Marks: 100

**Unit-1**

**Hours:10**

**Introduction**

- History of Internet, The World Wide Web, Web Browser, Web Server, URL, Working of Web, Web Page, Types of Web Pages, Web Content, Websites, Home Pages, Building Website, Website building tools, Web graphics design, basic tips for graphics design, Web Designing tools: Gimp (image resize, crop, edit background, save with different file types), Introduction to web programming, web programming languages.

**Unit-2**

**Hours:10**

**Introduction to XHTML**

- Basic Syntax, Standard structure, Basic text markup, Images, Hypertext, Links, Lists, Tables, Forms, CSS Introduction, Levels of style sheets, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The `` and `

` tags.

**Unit-3**

**Hours:12**

**JavaScript**

- Object orientation and JavaScript, General syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input, Control statements, Object creation and modification, Arrays, Functions, Constructor, Pattern matching using regular expressions, Errors in scripts, Examples.

**Unit-4**

**Hours:12**

**Introduction to XML and Web Design**

- Introduction to XML, Syntax of XML, XML document structure, Displaying raw XML documents, Displaying XML documents with CSS, XSLT Stylesheets, Web Design: Concepts of effective web design, Web design issues including Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Website, Page Layout and linking, User-centric design, Sitemap, Planning and publishing website, Designing effective navigation.

**Text Books:**

1. Robert W. Sebestra, "Programming the World Wide Web", 7th Edition /4thedition Addison Wesley Publication, 2013.

**Reference Books:**

1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
  2. Web Technologies, Black Book, dreamtech Press
  3. HTML 5, Black Book, dreamtech Press
  4. Web Design, Joel Sklar, Cengage Learning
  5. Developing Web Applications in PHP and AJAX, Harwani, McGrawHill
- Internet and World Wide Web How to program, P.J. Deitel& H.M. Deitel, Pearson

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**B.Sc. II Semester (2023-2024)**

<b>21PE201: Physical Education and Sports (SEC)</b>	
Total No of Teaching Hrs.: 28	Teaching Hrs. Per Week: 1
Credits: 1	Max. Marks: 25

<b>Practical (1+1)</b>	<b>28 Hrs.</b>
<b>Unit 1: - Practical</b> 1. Physical Education & Sports a. Conditioning Exercises b. Aerobics & Calisthenics c. One Major Game and One Indigenous Game (BasicSkills) d. One Track/Field Event e. Intramural Competitions	28
<b>Formative Assessment</b>	
<b>Assessment Occasion/ type</b>	<b>Weightage in Marks</b>
Practical	Internal Assessment - 25 Marks
<b>Total</b>	<b>25 Marks</b>

## References

1. Muller, J. P. (2000). Health, Exercise and Fitness. Delhi: Sports.
2. Vanaik, A. (2005) Play Field Manual, Friends Publication New Delhi
3. M.J Vishwanath, (2002) Track and Field Marking and Athletics Officiating Manual, Silver Star Publication, Shimoga

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<b>21NCC01: NCC-I(SEC)</b>	
Total No of Teaching Hrs.: 28	Teaching Hrs. Per Week: 1
Credits: 1	Max. Marks: 25

**Course Objectives:**

1. To understand the nature and Growth of National Cadet Corps in India
2. To understand aims, objectives, Logo, Emblem, and Organizational structure of NCC.

**Course Outcomes:**

At the end of this course students will be able to

1. Know the growth and evolution of NCC and its role in Nation building through Armed forces.
2. Visualize the signs, symbols, logo of NCC and understand their broader meaning.
3. Unity and Discipline, To develop qualities of character, courage, commandership and the ideals of selfless service.

**Unit I: NCC at Glance**

- a. History, of NCC
- b. Aims and objectives of NCC
- c. NCC motto and Song
- d. NCC Uniform
- e. Importance of Emblem, Flag

**Unit II: Defense at Glance**

- a. Cardinal principles of NCC
- b. NCC Organization
- c. Directorate of NCC In India
- d. Skeleton of NCC Administration

**Unit III: Activity Based Programmes (Campus & off Campus Activities)**

- a) Institutional training
- b) Community development
- c) Adventure training
- d) Youth exchange programme

**References:**

- NCC Manual, Government of India. <https://indiancc.nic.in/ncc-trg-syllabus-2019/>
- NCC by R. Gupta /NCC Handbook

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<b>21NSS01: NSS-I(SEC)</b>	
Total No of Teaching Hrs.: 28	Teaching Hrs. Per Week: 1
Credits: 1	Max. Marks: 25

**Course Objectives:**

1. To understand the nature and Growth of National Service Scheme in India
2. To understand aims, objectives, Logo, Emblem, and Organizational structure of NSS.

**Course Outcomes:**

At the end of this course students will be able to

1. Know the growth and evolution of NSS and its role in Nation building through community service.
2. Visualize the signs, symbols, logo of NSS and understand their broader meaning.
3. Appreciate the culture of Shramadhan and its benefits through working as a team or group.

**Unit I: Introduction of National Service Scheme**

- a. History, Philosophy and Objectives of NSS
- b. Significance of Emblem, Flag, Motto, Song, Badge, Discipline
- c. Basic Concepts and Components
- d. Programmes and Activities of NSS

**Unit II: NSS Song**

- a. NSS Anthem (Hindi & Kannada), National Integration song
- b. Rastriya seva yojana madiharu.
- c. Uteh samaj keliye Uteh Uteh.
- d. Navellaru Ondagi Balona Banni.
- e. Hum Sab Mil kar Deshka Apani.

**Unit III: Activity Based Programmes (Campus & off Campus Activities)**

- Swachh Bharat Abhiyan & Cleanliness drives
- Health awareness and camps
- Blood donation camps
- Environmental protection awareness
- Plantation drives
- Celebrations of National and International celebrations and observations
- Awareness Programs and Rallies
- Guest Lecture

**References:**

1. National Service Scheme Manual, Government of India.  
<https://nss.gov.in/sites/default/files/manualNss2006.pdf>
2. Dilshad. M.B National Service Scheme in Karnataka, (Ph. D Thesis submitted to Karnataka University Dharwad, 1997

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**B.Sc. II Semester (2023-2024)**

<b>21EN201: Generic English-II(AECC)</b>	
Total No of Teaching Hrs.: 56	Teaching Hrs. Per Week: 4
Credits: 3	Max. Marks: 100

**Objectives:**

1. To develop aesthetic sense of literature
2. To study and analyze essays and poetry
3. enable the learners to learn basic vocabulary and grammar.
4. Acquire the receptive and productive skills.

**Course Outcomes:**

At the end of the course the student will be able to:

1. Learn to appreciate literary texts.
2. Obtain the knowledge of literary devices and genres.
3. Acquire the skills of creative writing.
4. Be aware of their social responsibilities.
5. Develop the critical thinking skills.
6. Develop gender sensitivity.
7. Increase reading speed, analytical skills and develop presentation skills.
8. Become employable with requisite professional skills, ethics and values.

Unit No	Course Content	56 hours
Unit: I Prose	1. Water: The of Life- C. V. Raman 2. Gift of Language – J. G. Bruton 3. Education: Indian and American- Anurag Mathur	15 hrs
Unit: II Poetry	1. The Diameter of The Bomb- Yehuda Amichai 2. Because I Could Not Stop for Death- Emily Dickinson 3. Bangle Sellers- Sarojini Naidu	9 hrs
Unit: III Grammar & Vocabulary	1. Reported Speech 2. Active and Passive Voice 3. Synonyms, antonyms 4. Affixes	16 hrs
Unit: IV Receptive and Productive Skills	1. Dialogue writing 2. Sentence pattern & Verb structure 3. Translations – Kannada to English –English to Kannada Short Paragraphs based on themes with a message on nation, freedom fighters, and achievers. 15 short paragraphs with 5 – 6 sentences may be given in the textbook as model paragraphs. (a) Paragraph Translations from Kannada to English (b) Paragraph Translations from English to Kannada	16 hrs

## References:

1. *English in Mind: Anthology of Prose and Poetry- Textbook*
2. *English Improvement Course- Rajinder S. Dhillon & Deep Priya Dhillon;* AryaPublishing Company, 2021
3. *English Grammar Usage with Composition- R.P.Sinha*
4. *Communication Skills in English- Sanjay Kumar and Pushp Lata*
5. Quirk Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. *A Comprehensive Grammar of the English Language.* Longman.
6. Herring, Peter. *Complete English Grammar Rules.* Create space Independent Pub, California, 2016.
7. *Essential English Grammar;* Raymond Murphey Cambridge University Press.

K.L.E. Society's  
Raja Lakhamagouda Science Institute [Autonomous] Belagavi  
DEPARTMENT OF HINDI  
B.Sc. II Semester TEXT BOOK 2021 NEP  
Syllabus of B.Sc Ability enhancement compulsory course AECC-A2  
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(A) काव्य कुसुम, सम्पादक सुमित्र प्रकाशन, प्रयागराज-२११०११.

(B) Translational अनुक्रम

Sl. No.	Poem	Writer	Page No.
01	भूमिका	---	७
02	कर्मवीर	अयोध्यासिंह उपाध्याय 'हरिऔध'	१९-२१
03	हिमालय	रामधारीसिंह 'दिनकर'	२३-२६
04	हिरोशिमा	अज्ञेय	२९-३१
05	कालिदास	वैद्यनाथ मिश्र 'नागार्जुन'	३३-३५
06	जाहिल मेरे बाने	भवानी प्रसाद मिश्र	३७-३९
07	देश कागज पर बना नक्शा नहीं होता	सर्वेश्वरदयाल सक्सेना	४०-४२
08	आ: धरती कितना देती है!	सुमित्रानन्दन पन्त	४५-४७
09	कदम मिलाकर चलना होगा	अटल बिहारी वाजपेयी	५०-५२
10	औरत	चन्द्रकान्त देवताले	५४-५६
11	आठवीं मंज़िल पर	कुँवर नारायण	५८-६०
12	दातून बेचने वाले बच्चे	एकान्त श्रीवास्तव	६१-६३
13	ओ अच्छी लड़कियों	प्रतिभा कटियार	६५-६७

(B) अनुवाद कौशल (अनुवाद अभ्यास)

SL.NO.	DISTRIBUTION OF MARKS	MARKS
1	Objective type of questions (10 out of 12)	10
2	Annotation from poems (3 out of 5)	15
3	General Questions based on poems (2 out of 4)	20
4	Short Questions (5 out of 7) Translational	10
5	Question (1 out of 2) Translational	5
	<b>Total</b>	<b>60</b>
6	Internal Assessment, 1 <sup>st</sup> Test, 2 <sup>nd</sup> Test and MCQ Test	40
	<b>Grand Total</b>	<b>100</b>

**ಕನ್ನಡ ಪಠ್ಯಕ್ರಮ**  
**ಬಿ.ಎಸ್.ಸಿ ದ್ವಿತೀಯ ಸೆಮಿಸ್ಟರ್**  
**(Ability Enhancement Compulsory Course)**

**ಘಟಕ - 1 : ಜೀವನ ಕಲೆ**

1. ಜೀವನ ಕಲೆ - ಡಿ.ವಿ.ಜಿ.
2. ಕೂಲಿ ಮಾಡುತ್ತಿದ್ದಾಕೆ ಸಾಪ್ಪವೇರ ಕಂಪನಿಯ ಸಿಇಒ ಆಗಿದ್ದಾಕೆ -ಎ.ಆರ್. ಮಣಿಕಾಂತ
3. ತೆರೆದ ಮನ - ಎಚ್. ನರಸಿಂಹಯ್ಯ
4. ಚೈತನ್ಯದ ಪೂಜೆ - ದ.ರಾ.ಬೇಂದ್ರೆ

**ಘಟಕ - 2 : ಕನಸು**

1. ಧನಿಯರ ಸತ್ಯನಾರಾಯಣ - ಕೊರಡ್ಡಲ್ ಶ್ರೀನಿವಾಸರಾವ್
2. ನನ್ನ ಇಷ್ಟದ ಪುಸ್ತಕಗಳು - ಡಾ. ಎ.ಪಿ.ಜಿ. ಅಬ್ದುಲ್ ಕಲಾಂ
3. ನಾನೊಂದು ಕನಸ ಕಂಡೆ - ಅಕ್ಕಮಹಾದೇವಿ

**ಘಟಕ - 3 : ಮಳೆ**

1. ಧಾರವಾಡದಲ್ಲ ಮಳೆಗಾಲ - ಚೆನ್ನವೀರ ಕಣವಿ
2. ಬರ - ವೀರಭದ್ರ ಕೌದಿ
3. ನಾನು ಪುಟ್ಟ ಮಳೆ ನೋಡಿದ್ದು - ಪ್ರತಿಭಾ ನಂದಕುಮಾರ
4. ಮಳೆ ನಿಂತ ಮೇಲೆ - ಮಾವಿನಕೆರೆ ರಂಗನಾಥ

**ಘಟಕ - 4 : ಸಂಕೀರ್ಣ**

1. ಕಾಫಿ ಚಟ ಅನುವಂಶಿಕವೆ? ಪರಿಸರ ಪ್ರೇರಿತವೆ? - ಸುಧೀಂದ್ರ ಹಾಲ್ದೋಡೆರಿ
2. ಮಹಿಳೆ ಮತ್ತು ವಿಜ್ಞಾನ - ನೇಮಿಚಂದ್ರ
3. ವಿಗ್ರಹಗಳೋ ಗ್ರಹಗಳೋ- ಶ್ರೀ ಶಿವಮೂರ್ತಿ ಮುರುಘರಾಜೇಂದ್ರ ಮಹಾಸ್ವಾಮಿಗಳು

## Environmental Science

### Unit 1

**Nature of environmental studies, Natural resources and associated problems, Forest resources:** Definition, Scope and importance, Multidisciplinary nature of environmental studies, Need for public awareness. **1 Hrs**

### Unit 2

1. Use and over-exploitation, deforestation Timber extraction, mining, dams and their effects on forests and tribal people.
2. **Water resources:** Use and over-utilization of surface and ground water, floods, draught, Conflicts over water, dams-benefits and problems.
3. **Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources.
4. **Food resources:** World food problems, changes caused by agriculture, effects of modern agriculture, fertilizer-pesticide problems, water logging and salinity.
5. **Energy resources:** Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources.
6. **Land resources:** Land as resources and land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources. Equitable use of resources for sustainable Lifestyles. **4 Hrs**

### Unit 3

#### Ecosystems

1. Concept of an ecosystem.
2. Structure and function of an ecosystem.
3. Producers, consumers and decomposers.
4. Energy flow in the ecosystem.
5. Ecological succession.
6. Food chains, food webs and ecological pyramids.
7. Introduction, types, characteristic features, structure and function of the following ecosystems.
8. Forest ecosystem
9. Grassland ecosystem
10. Desert ecosystem
11. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans & estuaries).

**4 Hrs**

### Unit 4

#### Biodiversity and its conservation

1. Introduction- Definition: genetic, species and ecosystem diversity.
2. Biogeographically classification of India.
3. Values of Biodiversity: Consumptive use, productive use, social, ethical, aesthetic and option values.
4. Biodiversity at global, national and local levels.

5. India as a mega diversity nation.
6. Western Ghats as a biodiversity, Hot-spots of biodiversity.

Threats to biodiversity: Habitat loss, poaching of wild life, man-wildlife conflicts.

1. Endangered and endemic species of India.
2. Conservation of biodiversity.

**4 Hrs**

## **Unit 5**

### **Environmental Pollution**

Definition, causes, effects and control measures of:

1. Air pollution
2. Water pollution
3. Soil pollution
4. Marine pollution
5. Noise pollution
6. Thermal pollution
7. Nuclear hazards
8. Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
9. Role of an individual in prevention of pollution.
10. Disaster management: Floods, earthquake, cyclone, landslides and Tsunami.

**4 Hrs**

## **Unit 6**

### **Social Issues and Environment**

1. From Unsustainable to sustainable development.
2. Urban problems related to energy.
3. Water conservation, rain water harvesting, watershed management.
4. Resettlement and rehabilitation of people; its problems and concerns.
5. Environmental ethics: Issues and possible solutions.
6. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
7. Wasteland reclamation.
8. Consumerism and waste products
9. Environment protection Act
10. Air (prevention and pollution) Act.
11. Water (prevention and pollution) Act.
12. Wildlife protection Act.
13. Issues involved in enforcement of environmental legislation.
14. Public awareness.

**3 Hrs**