SEMESTER-III

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
CC201	**Probability and Statistics**	4	0	0	4	**Int**	**Uni**	**Total**	**Int**	**Uni**
						20	80	100	--	--
Course Outcomes (COs):	CO1: Understand measures of central tendency and dispersion. CO2: Represent the statistical data in a systematic way to analyze and draw meaningful information from them. CO3: Apply fundamental concepts of probability to analyze data and make informed decisions. CO4: Formulate the hypothesis and use various tests for testing of hypothesis.									
Prerequisite										Hrs.
UNIT I	Basic concepts of Statistics, qualitative and quantitative data, classification of data, construction of frequency distribution, diagrammatic representation of data. Measures of Central Tendency: Arithmetic mean, median and mode—their properties Measures of Dispersion: Range, mean deviation, quartile deviation, variance and standard deviation.									15
UNIT II	Correlation: Definition, scatter diagram, types of correlation, measures—Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient. Regression: Linear regression-fitting by least square method and interpretation, regression equations, regression coefficients									15
UNIT III	Concepts of probability: Experiment and sample space, events and operations with events, probability of an event, basic probability rules, applications of probability rules, conditional probability. Random Variables: Discrete and continuous random variable, probability distribution of a random variable, probability mass function, probability density function, expectation and variance of a random variable. Standard Probability Distributions: Binomial probability distribution, Poisson probability distribution, Normal probability distribution.									15
UNIT IV	Sampling Distribution: Concept of Population and Sample, parameter and statistic, sampling distribution of sample mean and sample proportion. Statistical Inference: Estimation and Hypothesis Testing (only concept).Hypothesis Testing for a Single Population: Concept of a hypothesis testing, tests involving a population mean and population proportion (z test and t test).Chi square test for independence of attributes and goodness of fit.									15
TextBooks/ ReferenceBooks	1.Manish Sharma, Amit Gupta, The Practice of Business Statistics, Khanna Book Publishing Company, 2010 (AICTE Recommended Textbook) 2.Das N. G., Statistical Methods, Combined Edition, Tata McGraw Hill, 2010. 3.Ross Sheldon M., Introduction to Probability and Statistics for Engineers and Scientists, 6th Edition, Elsevier, 2021.									

	4.Miller Irwin and Miller Marylees, Mathematical Statistics with Applications, Seventh Edition, Pearson Education, 2005 5. Pal Nabendu and Sarkar Sahadeb, Statistics: Concepts and Applications, Second Edition, PHI, 2013 6. Montgomery Douglas and Runger George C., Applied Statistics and Probability for Engineers, Wiley, 2016. 7. Reena Garg, Engineering Mathematics, Khanna Publishing House, 2024.
Web Resources	https://nptel.ac.in/courses/111106112 https://nptel.ac.in/courses/111105041

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
CC202	**Database Management Systems**	3	0	2	4	**Int**	**Uni**	**Total**	**Int**	**Uni**
						10	40	50	--	50
Course Outcomes (COs):	CO1: Understand Core Concepts of DBMS CO2: Understand components of Database Design CO3: Identify different database models CO4: Demonstrate Database Design including forms and reports through MS-Access									
Prerequisite	Basic knowledge of Set Theory.									Hrs.
UNIT I	Introduction to Databases: Definition of Data, Database, and DBMS, Overview of Database Applications, Advantages and Disadvantages of DBMS, Roles of Database Users and Administrators Data Models: Introduction to Data Models, Types of Data Models (Hierarchical, Network, Relational, Object-oriented), Importance of Data Models in DBMS									12
UNIT II	Entity-Relationship (ER) Model, Entities and Entity Sets, Attributes and Relationships, ER Diagrams, Key Constraints and Weak Entity Sets, Introduction to the Relational Model and Relational Schema Operations: Selection, Projection, Set Operations, Join Operations, Division, Tuple and Domain Relational Calculus									15
UNIT III	Normalization and Database Design: Functional Dependencies: Normal Forms (1NF, 2NF, 3NF, BCNF), Case Studies: Library system, sales system, hospital system Database Design: Keys: Primary Key, Candidate Key, Super Key, Foreign Key, Unique Key									8
UNIT IV	DBMS using MS access – Introduction and features, Tables, DDL DML and DQL queries using wizards, Join tables and queries using wizard, Relationships, Macros, Forms, Reports, Module									10
TextBooks/ Reference Books	1.Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", third edition,McGraw – Hill, 2018 2.Korth, Silbertz, Sudarshan," Database System Concepts", Seventh Edition, McGraw – Hill.(2019) 3.R.P. Mahapatra, Govind Verma, "Database Management Systems", Khanna Publishing House, 2025.									
Web Resources	1.https://oracle-base.com/articles 2.https://forums.oracle.com/ords/apexds/domain/dev- community/category/sql_and_pl_sql 3.https://asktom.oracle.com/ords/f?p=100:1:0									

CC202: Database Management Systems Practical List

1. Draw an ER Diagram of Sales system.
2. Draw an ER Diagram of Hospital Management System.
3. Convert The ER diagram in question no 1 into tables.
4. Convert the ER diagram of question no 2 into tables.
5. Consider the following Schema
   Supplier(SID, Sname, branch, city, phone)
   Part (PID, Pname, color, price)
   Supplies(SID, PID, qty, date_supplied)
   a. Create above tables in ACCESS for data entry.
   b. Create relationships between these tables in ACCESS.
   c. Perform SQL Queries including joins
   d. Create a form for these tablesand perform data entry.
   e. Create a report in Access
6. Demonstrate how to create a blank form in Access.
7. Demonstrate how to split form in Access.
8. Demonstrate how tocreate a form that displays multiple records in Access.
9. Demonstrate how tocreatea form that contains a subform in Access.
10. Demonstrate how tocreatea Navigation form in Access.
11. Demonstrate how tocreatereports in Access.
12. Demonstrate how to create reports in Access with grouping, sorting or totals.
13. Demonstrate how tohighlight data with conditional formatting.

<table>
<tr><th>Course Code</th><th>Cours Title</th><th>L</th><th>T</th><th>P</th><th>Credit</th><th colspan="3">Theory</th><th colspan="2">Practical</th></tr>
<tr><td rowspan="2">SEC201</td><td rowspan="2">Python Programming</td><td rowspan="2">3</td><td rowspan="2">0</td><td rowspan="2">2</td><td rowspan="2">4</td><td>Int</td><td>Uni</td><td>Total</td><td>Int</td><td>Uni</td></tr>
<tr><td>10</td><td>40</td><td>50</td><td>--</td><td>50</td></tr>
<tr><td>Course Outcomes (COs):</td><td colspan="9">CO1: Develop modular Python programs.
CO2: Apply suitable Python libraries to solve a given problem.
CO3: Understand basic Data visualization and File handling in Python.</td></tr>
<tr><td>Prerequisite</td><td colspan="8">Understanding of Problem solving techniques using a programming language and basic datastructures.</td><td>Hrs.</td></tr>
<tr><td>UNIT I</td><td colspan="8">Introduction: History and Application areas of Python; Structure of Python Program;Identifiers and Keywords; Operators and Precedence; Basic Data Types and type conversion;Statements and expressions; Input/Output statements.
Strings: Creating and Storing Strings, Built-in functions for strings; string operators, Stringslicing and joining; Formatting Strings.
Control Flow Statements: Conditional Flow statements; Loop Control Statements; Nestedcontrol Flow; continue and break statements, continue, Pass and exit.</td><td>15</td></tr>
<tr><td>UNIT II</td><td colspan="8">Functions: Built-In Functions, Function Definition and call; Scope and Lifetime of Variables,Default Parameters, Command Line Arguments; Lambda Functions; Assert statement;Importing User defined module;
Mutable and Immutable objects: Lists, Tuples and Dictionaries; Commonly used Functions on Lists, Tuples and Dictionaries. Passing Lists, tuples and Dictionaries as argumentsto functions. Using Math and Numpy module for list of integers and arrays.</td><td>15</td></tr>
<tr><td>UNIT III</td><td colspan="8">Files: Types of Files; Creating, Reading and writing on Text and Binary Files;The Pickle Module, Reading and Writing CSV Files. Reading and writing of csv and JSON files.
Exception Handling: Try-except-else-finally block, raise statement, hierarchy of exceptions,adding exceptions.
Data visualization: Plotting various 2D and 3D graphics; Histogram; Pi charts; Sine and cosinecurves.</td><td>15</td></tr>
<tr><td>TextBooks/ Reference Books</td><td colspan="9">1. Venkatesh, Nagaraju Y, Introduction to Python Programming, Khanna Publishing House, 2021.
2. Jeeva Jose, Introduction to Computing & Problem Solving With PYTHON, Khanna Publishing House, 2023.
3. Sheetal Taneja & Naveen kumar: Python Programming a Modular approach – A Modularapproach with Graphics, Database, Mobile and Web applications, Pearson, 2017.
4. Think Python, by Allen Downey, 2 nd edition, 2015, O'Reilly. https://drive.google.com/file/d/1p9Pul6d5UvnQrO9-Q-LE2_p4YvMk5cIg/view
5. An introduction to Python for absolute beginners, by Bob Dowling, Cambridge Univ.
6. Introduction to Computation and Programming using Python, by John Guttag, 2 nd edition,2016, PHI India.</td></tr>
<tr><td>Web Resources</td><td colspan="9">1. https://www.learnpython.org/
2. https://www.w3schools.com/python/default.asp</td></tr>
</table>

SEC201:Python Programming Lab

1. Write a program to find whether a number is a prime number.
2. Write a program to print m raise to power n, where m and n are read from the user.
3. Write a program having a parameterized function that returns True or False depending onwhether the parameter passed is even or odd.
4. Write a program to print the summation of the following series upto n terms:1-2+3-4+5-6+7 - - - -n
5. Write a menu driven program to perform the following operations on strings using stringbuilt in functions.

a. Find the frequency of a character in a string.
b. Replace a character by another character in a string.
c. Remove the first occurrence of a character from a string.
d. Remove all occurrences of a character from a string.

6. Write a program that accepts two strings and returns the indices of all the occurrences of thesecond string in the first string as a list. If the second string is not present in the first string,then it should return -1
7. Using Numpy module write menu driven program to do following

a. Create an array filled with 1's.
b. Find maximum and minimum values from an array
c. Dot product of 2 arrays.
d. Reshape a 1-D array to 2-D array.

8. Write a function that takes a sentence as input from the user and calculates the frequency ofeach letter. Use a variable of dictionary type to maintain the count.
9. Consider a tuple t1=(1,2,5,7,9,2,4,6,8,10). Write a program to perform following operations:

a. Print contents of t1 in 2 separate lines such that half values come on one line and otherhalf in the next line.
b. Print all even values of t1 as another tuple t2.
c. Concatenate a tuple t2=(11,13,15) witht1.
d. Return maximum and minimum value from t1.

10. Write a function that reads a file file1 and copies only alternative lines to another file file2.Alternative lines copied should be the odd numbered lines.
11. Write a Python program to handle a ZeroDivisionError exception when dividing a number by zero.
12. Write a program that reads a list of integers from the user and throws an exception if any numbers are duplicates.
13. Write a program that makes use of a function to display sine, cosine, polynomial andexponential curves.
14. Take as input in the months and profits made by a company ABC over a year.
    Representthis data using a line plot.
    Generated line plot must include X axis label name = Month Number and Y axis label Name = Total profit.

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
CC203	**Software Engineering**	3	0	0	3	**Int**	**Uni**	**Total**	**Int**	**Uni**
						15	60	75	--	--
Course Outcomes (COs):	**CO1:** To Acquire a comprehensive understanding of the software development lifecycle and its application in contemporary software engineering practices. **CO2:** To Develop proficiency in project management methodologies and strategic decision-making for successful software project execution. **CO3:** To Master the art of software design, development, and testing to produce robust and efficient software solutions. **CO4:** To understand the importance of quality management in software engineering for sustenance and reliability.									
Prerequisite	Basic understands of Software, Applications, Programming fundamentals									Hrs
UNIT I	**Introduction**: Role of software, changing nature of software, layered technology, a process framework. **Process models:** The waterfall model, incremental process models, evolutionary process models, the unified process.**Agile software development:** Agility Principles, Agile methods, Plan-driven and agiledevelopment, Extreme programming, Scrum, A Tool Set for the Agile Process.									12
UNIT II	**Software Requirements Engineering:** Functional and non-functional requirements, the software requirements document, Requirements specification, Requirements engineering processes, Requirements elicitation and analysis, Requirements validation, Requirements management. Inoduction to System Analysis and Tools(DFD,ERD)									12
UNIT III	**Design:** Design process and design quality, design concepts, the design model, software architecture, data design, Input Design, Output Design, Basic structural modeling, class diagrams,sequence diagrams, collaboration diagrams, use case diagrams, component diagrams. **Testing Strategies:** A strategic approach to software testing, test strategies for conventionalsoftware, black-box and white-box testing, validation testing, system testing, the art of debugging.									12
UNIT IV	**Quality Management:** Software quality, software quality attributes and Quality concepts, software quality assurance. SCM, vesion control and **Release Management**									9
TextBooks/ ReferenceBooks	1. Software Engineering, N.S. Gill, Khanna Publishing House, 2023 (AICTERecommended Textbook) 2. Software Engineering, Ian Somerville, 9th edition, Pearson education. 3. Software Engineering A practitioner's Approach, 8th edition, Roger S Pressman, BruceR. Maxim. McGraw Hill Education, 2015. 4. Stephen Schach, Software Engineering 7th ed, McGraw-Hill, 2007 5. Software Engineering: Principles and Practice Hans van Vliet									

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
DSE201.1	**Professional Elective – I** Basics of Data Analytics using Spreadsheet	4	0	4	6	**Int**	**Uni**	**Total**	**Int**	**Uni**
						20	80	100	50	--
Course Outcomes (COs):	CO1: Understand the basics of MS Excel for data analytics and its applications. CO2: To explore advanced Excel functions and data analytics tools. CO3: Develop proficiency in using spreadsheet software for data manipulation andAnalysis. CO4: Build and use spreadsheet models for decision making & Communicate data insights effectively									
Prerequisite	Knowledge on basics of mathematical & Statistical concepts such as arithmetic,Percentages, averages, and basic algebra.									Hrs
UNIT I	**Introduction to MS-Excel** Spreadsheets basics, Need for Spreadsheets, Work-Book, Work –Sheet, Parts of aMS-Excel Work-Sheet- Program area, Work area, Contents of Title-Bar, Manu-Bar,Contents of Manu Ribbons, Meaning of Cell- Cell address, Formula-Bar, Row-Numbers, Column-Letters, Quick Access to Tool-Bar, Office Button, FloatingFrames, Adding Work-Sheets in Sheet Tab, Status- Bar., and other features of Excel.									15
UNIT II	**Advanced Excel Functions:** VLOOKUP, HLOOKUP, INDEX-MATCH, and PivotTables. Data Analysis ToolPak: UsingExcel's built-in data analysis tools such as Descriptive Statistics, Histograms, Correlation, and Regression.									15
UNIT III	**Introduction to Data Analytics** Understanding data and its types (structured, unstructured, semi-structured)-What is Data Analytics- Types of data Analytics-Importance of Data Analytics- Applications of Data Analytics.									15
UNIT IV	**Case Studies on Data Analytics:** Data Collection Methods - Different Data Sources & format - Data Cleaning and Transformation - Handling Missing Data and Outliers. - Ethical considerations in data analytics. - Real-world Applications of Data Analytics- Industry-specific applications (finance, marketing, operations) - Case Study **Note: Case study is for discussion not to be considered for evaluation.**									15
TextBooks/ Reference Books	1. "Beginner's Guide for Data Analysis using R Programming" by Jeeva Jose,Khanna Publishing House, 2024. 2. "Data Analytics" by V.K. Jain, Khanna Book Publishing Company, 2024. 3. "Excel Data Analysis For Dummies" by Stephen L. Nelson and E. C. Nelson, JohnWiley & Sons; 3rd edition, 2016 4. "Data Analysis Using Microsoft Excel" by Michael R. Middleton, Thomson,Brooks/Cole, 3rd edition , 2004 5. "Excel 2019 Bible" by Michael Alexander, Richard Kusleika, and John Walkenbach,John Wiley & Sons, 25 Sept 2018 6. "Spreadsheet Modeling and Decision Analysis: A Practical Introduction toBusiness Analytics" by Cliff T Ragsdale, Cegage learning asia pet. 2015 7. "Mastering Excel" by WebTech Solutions, Khanna Publishing House, 2024.									

DSE201.1: Professional Elective – I Basics of Data Analytics using Spreadsheet Program List

PART – A: Understanding and Describing the Data

Introduction to Excel and Basic Functions

1. Getting started with Excel: Workbook, Worksheet, Cells, and Ranges
2. Data entry and basic formatting techniques
3. Using basic arithmetic functions: SUM, AVERAGE, MIN, MAX, ROUND
4. Introduction to cell referencing: relative, absolute, and mixed

Data Importing and Pre-processing

1. Importing data from various sources (CSV, text files, web data)
2. Data cleaning: removing duplicates, handling missing data, and standardizing formats
3. Data transformation: text-to-columns, data validation techniques
4. Using the "Find & Replace" and "Text Functions" (LEFT, RIGHT,MID, CONCATENATE)

Descriptive Statistics Using Excel

1. Calculating measures of central tendency: mean, median, mode
2. Computing measures of dispersion: range, variance, standard deviation
3. Creating and interpreting frequency distributions and histograms
4. Using Excel's "Data Analysis Toolpak" for basic statistical analysis

PART- B: Beyond the Basics: Visualizing and Communicating Data

Advanced Spreadsheet Functions

1. Using logical functions: IF, AND, OR, IFERROR
2. Lookup and reference functions: VLOOKUP, HLOOKUP, INDEX, MATCH
3. Data aggregation techniques: SUMIFS, COUNTIFS, AVERAGEIFS
4. Text functions for data manipulation: TRIM, CLEAN, TEXT, RIGHT, LRFT, MID

Data Visualization Techniques

1. Creating various chart types: bar, line, pie, scatter
2. Advanced charting techniques: combo charts, dual-axis charts
3. Data visualization best practices: choosing the right chart, formatting, and styling
4. Creating and customizing PivotTables and Pivot Charts

Dashboard Creation

1. Introduction to dashboards: concepts and components
2. Using PivotTables and Pivot Charts for dashboard elements
3. Applying conditional formatting for dynamic visual cues
4. Creating interactive dashboards with slicers and timeline

<table>
<tr><th>Course Code</th><th>Cours Title</th><th>L</th><th>T</th><th>P</th><th>Credit</th><th colspan="3">Theory</th><th colspan="2">Practical</th></tr>
<tr><td rowspan="2">DSE201.2</td><td rowspan="2">Professional Elective – I
Feature Engineering</td><td rowspan="2">4</td><td rowspan="2">0</td><td rowspan="2">4</td><td rowspan="2">6</td><td>Int</td><td>Uni</td><td>Total</td><td>Int</td><td>Uni</td></tr>
<tr><td>20</td><td>80</td><td>100</td><td>50</td><td>--</td></tr>
<tr><td>Course Outcomes (COs):</td><td colspan="10">CO1:Understand the importance of features in machine learning and differentiate between various types of data and features
CO2:Apply basic feature preprocessing techniques
CO3:Implement feature engineering techniques for numerical data and utilize categorical data techniques
CO4: Understand feature selection and feature transformation techniques with their applications</td></tr>
<tr><td>Prerequisite</td><td colspan="9"></td><td>Hrs</td></tr>
<tr><td>UNIT I</td><td colspan="9">IntroductiontoFeatureEngineering
Introduction to Data and Features:Importane of Features in Machine Learning
Data types and features:Numerical,Categorical,Ordinal,Discrete,Continuous, Interval and Ratio</td><td>15</td></tr>
<tr><td>UNIT II</td><td colspan="9">BasicFeaturePreprocessing
Handling Missing Data and Data Cleaning
Feature Scaling-Standardization, Min-MaxScaling
Normalization andTransformation</td><td>15</td></tr>
<tr><td>UNIT III</td><td colspan="9">FeatureEngineering Techniques
Techniques for Numerical Data: Binning and Discretization, Polynomial and Interaction Features
Categorical Data Techniques:One Hot Encoding, Label Encoding</td><td>15</td></tr>
<tr><td>UNIT IV</td><td colspan="9">Feature Extraction vs. Feature Selection
Feature Selection Methods:Filter Method,Wrapper Method,Hybrid Method
Feature Reduction:Introduction to Principal Components Analysis(PCA), Application of PCA</td><td>15</td></tr>
<tr><td>TextBooks/ Reference Books</td><td colspan="10">1.M.C.Trivedi,Data Science and Data Analytics Using Python Programming, Khanna Publishing House, 2024.
2.Zheng,Alice,&Casari,Amanda.(2018).Feature engineering for machine learning: Principles and techniques for data scientists. O'Reilly Media, Inc.
3. Kalita,J.K.,Bhattacharyya,D.K.,&Roy,S.(2023).Fundamentals of Data Science: Theory and Practice. Elsevier. ISBN-13: 9780323917780.</td></tr>
</table>

DSE201.2 FeatureEngineering Laboratory

1. Fillmissing values in the"Age"column using the mean/median/mode value in a dataset with columns "Age", "Height", "Weight", and "Grade".
2. Clean a data set having columns 'Name', ‘Gender’and'Age’wherethe"Name"columncontainsan entry like "invalid data"
3. ApplyMin-Max normalization having columns "Height"and"Weight"ina dataset
4. Visualize the distribution of"Age"in a dataset using a histogram
5. Compute and visualize the correlation matrix for"Height"and"Weight"inadataset
6. Bin"Age" into categoriessuchas"Young"(0-18),"Adult"(19-40), "Middle-Aged"(41-60),and "Senior" (60+)
7. Create polynomial features from two numerical columns"Height"and "Weight"
8. Apply alogarithmic transformation to the"Distance"columnina dataset
9. Apply one-hot encoding to the"Category"column containing values["Good","Better","Best"] and the "Gender" column with ["Male", "Female"]
10. Tokenize the text data for a dataset with a column'Text
11. Apply stemming to thetextforadataset withacolumn'Text’
12. Applyl emmatization for a dataset with a column 'Text’
13. Convert text data into aBag-of-Word srepresentation for a dataset with a column'Text'.
14. ApplyTF-ID Ftransformation to text data foracolumn'Text'
15. Resize an image in a dataset to256x256 pixels
16. Rotate image in a dataset by 30 degrees and translate by 10 pixels
17. Decompose a time series into trend,seasonal,and residual components for a dataset with a column 'TimeSeries'
18. PerformPrincipal Component Analysis(PCA)on a dataset and visualize the first two principal Components

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
DSE201.3	**Professional Elective – I** Web Programming I	4	0	4	6	**Int**	**Uni**	**Total**	**Int**	**Uni**
						20	80	100	50	--
Course Outcomes (COs):	CO1. Understand the fundamentals of HTML5 and CSS3. CO2. Learn how to build web applications using HTML5, CSS3, and jQuery. CO3. Develop skills in making responsive web site using bootstrap. CO4. Explore features of jQuery to make interactive web applications.									
Prerequisite	Basic understanding of HTML, CSS and JavaScript									Hrs
UNIT I	**Introduction to HTML5** HTML5 Introduction , Limitations of HTML, Advantages of HTML5, Features of HTML5, HTML5 Syntax , HTML5 Page Structure, Obsolete Elements/Deprecated Elements, HTML5 New Elements, HTML5 Input Types, Web Forms 2.0, HTML5 Form Elements , HTML5 Form Attributes , HTML5 Canvas, HTML5 Audio, HTML5 Video									15
UNIT II	**Introduction To CSS3** Intro CSS3,CSS3 Borders, CSS3 Backgrounds, CSS3 Text Effects, CSS3 Fonts, Positioning (Relative/Absolute), CSS3 Transforms, CSS3 Transitions, CSS3 Animations,CSS3 User Interface, Intro to Responsive Web Design, Importance of Responsive Web Design, Tips for Responsiveness									15
UNIT III	**Introduction to Bootstrap** Bootstrap Grid System, Grid options, Bootstrap CSS Overview, Bootstrap Typography, Bootstrap Tables, Bootstrap Forms, Bootstrap Buttons, Bootstrap Glyphicons, Bootstrap Dropdowns, Bootstrap Button Groups, Bootstrap Button Dropdowns, Bootstrap Input Groups, Bootstrap Navbar, Bootstrap Pagination, Bootstrap Alerts, Bootstrap Progress Bars									15
UNIT IV	**Introduction to jQuery** JQuery Introduction, Overview of jQuery's features, Downloading and installing jQuery, Creating a simple jQuery enabled page, jQuery Syntax, jQuery Selectors, jQuery Events, jQuery Effects, jQuery and HTML contents, jQuery and CSS Classes, jQuery Animations and Effects									15
TextBooks/ Reference Books	1. HTML 5, CSS 3 & Bootstrap 4 All-in-One: a complete introduction to front end web development by Mike Ludo 2. HTML5: The Missing Manual 2nd Edition by Matthew MacDonald 3. CSS3: The Missing Manual (Missing Manuals) Revised Edition by David Sawyer McFarland 4. JavaScript & jQuery: The Missing Manual 3rd Edition by David Sawyer McFarland 5. Responsive Web Design with HTML5 and CSS3 - Second Edition: Build responsive and future-proof websites to meet the demands of modern web users 2nd Edition by Ben Frain 6. Front-end Web Developer (Careers in Technology Series): JavaScript, HTML5, and CSS3 (Bootcamp) 1st Edition by Mark Sapp									

DSE201.3 Professional Elective– I Advance Web Technology Laboratory
1. Create a simple Web Page with HTML5 & CSS3 2. Write a program to set Headers , Paragraph for web page 3. Write a program to set pages for webpage 4. Write a program to create animation elements 5. Write a program to create a responsive website for all devices 6. Write a program to create Box and set Positions for elements 7. Write a program to create buttons and use for pages or send forms 8. Write a program to insert Video and Audio in webpage 9. Write a program to create attractive Form using different form elements 10. Write a program to create Circle, Thumbnail and set Text on images 11. Write a JQuery program to demonstrate different selectors. 12. Write a JQuery program to demonstrate different events. 13. Write a JQuery program to set and get HTML contents and attributes. 14. Write a JQuery program to set and return CSS properties.

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
VAC201.1	**Yoga and Physical fitness**	0	0	2	1	**Int**	**Uni**	**Total**	**Int**	**Uni**
						20	30	50	--	--
Course Outcomes (COs):	CO1: Gain a comprehensive understanding of yoga and its modern applications for holistic well-being. CO2: Demonstrate proficiency in yogic anatomy and physiology, enhancing yoga practice and promoting physical and energetic balance. CO3: Master the Eight Limbs of Yoga and comprehend their psychological impact, fostering personal growth and self-realization. CO4: Integrate yoga principles into sports and physical fitness activities to enhance performance and prevent injuries. CO5: Develop skills in wellness management and nutrition.									
Note	All the theoretical contents shall be delivered through the practical workshop mode only. No class room teaching is encouraged in this course.									Hrs.
UNIT I	● Yoga: Meaning and definition ● Importance of yoga in 21st century ● Introduction to Yogic Anatomy and Physiology ● Yoga & sports, Yoga for healthy lifestyle ● Types of Yoga: - Hatha yaga, laya yoga, mantra yoga, ● bhakti yoga, karma yoga, jnana yoga, raj yoga ● Study of Chakras, Koshas, Pranas, Nadis, Gunas, Vayus and its application in Yogic practices. ● Ashtang Yoga: - Yama, niyama, asana, pranayama, Pratyahar, dharna, dhyan, Samadhi: Benefits, Utilities & their psychological impact on body and mind. According to yoga concept of normality in modern psychology, concept of personality & its development, yogic management of psycho-somatic ailments: frustration, anxiety, depression									
UNIT II	● Sports for Physical Fitness: Meaning and definition ● Physical Activity – Concept, Benefits of Participation in Physical Activities ● Components and Significance of Physical Fitness -Health, Skill and Cosmetic Fitness ● Types of Physical Activities – Walking, Jogging, Running, Calisthenics, Rope Skipping, Cycling, Swimming, Circuit Training, Weight training, Adventure Sports ● Principles of Physical Fitness, Warming Up, Conditioning, Cooling Down, Methods to Develop and Measure Health and Skill related components of Physical Fitness ● Measurement of Health Related Physical Fitness (HRPF)									
UNIT III	● Physical Wellness: Concept, Components ● Types of wellness: psychological, social, emotional, and spiritual. ● Significance with reference to Positive Lifestyle 2.2 ● Concepts of Quality of Life and Body Image ● Factors affecting Wellness ● Wellness Programmes									
UNIT IV	● Concept of Nutrients, Nutrition, Balanced Diet, Dietary Aids and Gimmicks ● Energy and Activity- Calorie Intake, Energy Balance Equation									

	● Obesity - Concept, Causes, Obesity Related Health Problems ● Weight Management through Behavioural Modifications	
TextBooks/ Reference Books	● Anand O P. Yog Dawra Kaya Kalp. Sewasth Sahitya Perkashan. Kanpur. ● Brown, J.E. Nutrition Now Thomson-Wadsworth. ● Corbin et.al.Fitness & Wellness-Concepts. McGraw Hill. Publishers. New York.U.S.A ● Corbin, C. B., G. J. Welk, W. R Corbin, K. A. Welk, Concepts of Physical Fitness: Active Lifestyle for Wellness. McGraw Hill, New York, USA. ● Hoeger, W W K and S.A. Hoeger. Principles and Labs for Fitness and Wellness, Thomson Wadsworth, California, USA. ● Hoeger, W.W. & S. Hoeger Fitness and Wellness. 7th Ed. Thomson Wadsworth, Boston, USA. ● Kamlesh, M. L. & Singh, M. K.) Physical Education (Naveen Publications). ● Kansal, D.K. Text book of Applied Measurement, Evaluation & Sports Selection. Sports & Spiritual Science Publications, New Delhi. ● Kumari, Sheela, S., Rana, Amita, and Kaushik, Seema,, Fitness, Aerobics and Gym Operations, Khel Sahitya, New Delhi ● Lumpkin, A. Introduction to Physical Education, Exercise Science and Sports Studies, McGraw Hill, New York, U.S.A. ● Sarin N) Yoga Dawara Rogon Ka Upchhar.Khel Sahitya Kendra ● Savard, M. and C. Svec The Body Shape Solution to Weight Loss and Wellness: The Apples & Pears Approach to Losing Weight, Living Longer, and Feeling Healthier. Atria Books, Sydney, Australia. ● Siedentop, D. Introduction to Physical Education, Fitness and Sport, McGraw Hill Companies Inc., New York, USA. ● Sri Swami Ramas. Breathing. Sadhana Mandir Trust.Rishikesh. ● Swami Ram Yoga & Married Life Sadhana Mandir Trust. Rishikesh	

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
VAC201.2	**Sports**	0	0	2	1	**Int**	**Uni**	**Total**	**Int**	**Uni**
						20	30	50	--	--
Course Outcomes (COs):	CO1: Understand the fundamental principles and concepts of sports management, includingits scope, organizational structure, and ethical considerations. CO2: Analyse the role of marketing and sponsorship in the sports industry, with a focus onbranding, target audience segmentation, and event management. CO3: Develop proficiency in financial management techniques specific to the sports industry,including revenue generation, cost management, and investment strategies. CO4: Explore the application of analytics and technology in sports, including performanceevaluation, strategic decision-making, and fan engagement. CO5: Apply theoretical knowledge to practical scenarios through case studies and projects, fostering critical thinking and problem-solving skills in sports management contexts.									
Note	All the theoretical contents shall be delivered through the practical workshop mode only. No class room teaching is encouraged in this course.									Hrs.
UNIT I	**Introduction to Sports Management** ● Definition and scope of sports management ● Significance of sports management in society and its evolution over time ● Organizational structure of sports: amateur, professional, and non-profit entities ● Roles and responsibilities of key personnel: managers, coaches, and agents ● Governance bodies in sports: FIFA, IOC, and NCAA ● Legal issues: contracts, negotiations, intellectual property rights ● Ethical considerations: fair play and doping									
UNIT II	**Sports Marketing and Sponsorship** ● Unique aspects of sports marketing ● Fan engagement strategies ● Target audience identification and segmentation ● Branding strategies for sports teams and athletes ● Sponsorship and endorsement deals ● Negotiating and managing partnerships ● Event management: planning, organizing, and promoting sports events									
UNIT III	**Financial Management in Sports** ● Revenue generation in sports: ticket sales, broadcasting rights, merchandise sales ● Financial models: budgeting and forecasting ● Cost management: player salaries, facility expenses, operational costs ● Investment opportunities in sports ● Risk management techniques specific to sports organizations									
UNIT IV	**Sports Analytics and Technology** ● Introduction to sports analytics ● Evaluating player performance ● Devising game strategies ● Fan engagement through technology ● Analytical techniques: statistical analysis, data visualization, predictive modeling									

	● Key performance indicators (KPIs) in sports ● Applications of analytics: talent scouting, injury prevention, performance optimization.	
TextBooks/ Reference Books	1. Pedersen, P. M., Thibault, L., & Pedersen, P. M. (2019). Contemporary Sport Management. Human Kinetics. 2. Hoye, R., Smith, A. C. T., Nicholson, M., et al. (2021). Sports Management: Principlesand Applications. Routledge. 3. Chelladurai, P., & Kerwin, S. (2017). Introduction to Sport Management: Theory and Practice. Human Kinetics. 4. Hoye, R., Cuskelly, G., & Nicholson, M. (2019). Sports Governance: A Guide for Sport Organizations. Routledge. 5. Conrad, M. (2018). The Business of Sports: A Primer for Journalists. Routledge. 6. Shank, M. D. (2019). Sports Marketing: A Strategic Perspective. Pearson. 7. Collett, P., & Fenton, W. (2019). The Sponsorship Handbook: Essential Tools, Tips and Techniques for Sponsors and Sponsorship Seekers. Kogan Page. 8. Fullerton, S. Jr., & Funk, D. C. (2019). Sports Marketing: A Practical Approach. Routledge. 9. Conrad, M. (2019). Winning in Sports Business: Essential Marketing, Finance, and Management Strategies. Routledge. 10. McCarty, L. A., & McPherson, G. (2019). Sports Event Management: The Caribbean Experience. Routledge. 11. Brown, M. T., Rascher, D., & Leeds, M. A. (2017). Financial Management in the Sport Industry. Routledge. 12. Winfree, J. A., & Rosentraub, M. S. (2017). Sports Finance and Management: Real Estate, Entertainment, and the Remaking of the Business. Taylor & Francis. 13. Foster, G., O'Reilly, N., & Cuskelly, G. (2018). Sports Business Management: Decision Making Around the Globe. Routledge. 14. Brown, M. T., & Shick, D. M. (2019). Financial Management in the Sport Industry. Routledge. 15. Conrad, M. (2018). The Business of Sports: A Primer for Journalists. Routledge. 16. Alamar, B. C. (2013). Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers. Columbia University Press. 17. Miller, T. W. (2019). Sports Analytics and Data Science: Winning the Game with Methods and Models. FT Press. 18. Marchi, M., Albert, J., & Baumer, B. (2014). Analyzing Baseball Data with R. Chapman and Hall/CRC. 19. Schumaker, R. P., Hwang, R. S. Y., & Chen, H. (2016). Sports Data Mining. Routledge. 20. Alamar, B. C. (2013). Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers. Columbia University Press.	

<table>
<tr><th>Course Code</th><th>Cours Title</th><th>L</th><th>T</th><th>P</th><th>Credit</th><th colspan="3">Theory</th><th colspan="2">Practical</th></tr>
<tr><td rowspan="2">VAC201.3</td><td rowspan="2">NCC</td><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">2</td><td rowspan="2">1</td><td>Int</td><td>Uni</td><td>Total</td><td>Int</td><td>Uni</td></tr>
<tr><td>20</td><td>30</td><td>50</td><td>--</td><td>--</td></tr>
<tr><td>Course Outcomes (COs):</td><td colspan="9">CO1: Understand the foundational role of drill in fostering discipline and leadership within a group, enabling effective command towards achieving common goals.
CO2: Appreciate the importance of grace and dignity in executing foot drill movements, recognizing their significance in enhancing performance and teamwork.
CO3: Comprehend the criticality of weapon handling and detailed safety measures, emphasizing the importance of accident prevention through strict adherence to safety protocols.
CO4: Develop an awareness of diverse terrain types and their strategic significance in battle craft, enabling informed decision-making and effective utilization of terrain features for tactical advantage.</td></tr>
<tr><td>Note</td><td colspan="8">All the theoretical contents shall be delivered through the practical workshop mode only. No class room teaching is encouraged in this course.</td><td>Hrs.</td></tr>
<tr><td>UNIT I</td><td colspan="8">Overview of NCC, its history, aims, objectives, and organizational structure, Incentives and duties associated with NCC cadetship; Maneuvers: Foot drill, Word of Command, Attention, and stand at ease, and Advanced maneuvers like turning and sizing; Parade formations: Parade line, open line, and closed line; Saluting protocols, parade conclusion, and dismissal procedures. Marching styles: style march, double time march, and slow march</td><td></td></tr>
<tr><td>UNIT II</td><td colspan="8">Weapon Training, Handling firearms, Introduction and characteristics of the .22 rifle; Handling Firearm techniques, emphasizing safety protocols and Best practices.</td><td></td></tr>
<tr><td>UNIT III</td><td colspan="8">Map Reading (MR): Topographical forms and technical terms, including relief, contours, and gradients, crucial for understanding terrain features; Cardinal points , magnetic variation and grid convergence</td><td></td></tr>
<tr><td>UNIT IV</td><td colspan="8">Field Craft & Battle Craft (FC & BC): Fundamental principles and techniques essential for effective field and battle craft operations; Methods of judging distance, including estimation, pacing, and visual cues</td><td></td></tr>
<tr><td>TextBooks/ ReferenceBooks</td><td colspan="9">● DGNCC Cadet's Hand Book - Common Subjects -All Wings
● Tiwari, R. (2019). NCC: Grooming Feeling of National Integration, Leadership and Discipline among Youth. Edwin Incorporation.
● Chhetri, R.S. (2010). Grooming Tomorrows Leaders, The National Cadet Corps.
● Directorate General National Cadet Corps (2003). National Cadet Corps, Youth in Action.
● Vanshpal, Ravi (2024). The NCC Days, Notion Press.</td></tr>
</table>

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
VAC201.4	NSS	0	0	2	1	Int	Uni	Total	Int	Uni
						20	30	50	--	--
Course Outcomes (COs):	CO1: To provide students with an understanding of the history, philosophy, and basic concepts of the National Service Scheme (NSS). CO2: To familiarize students with the aims, objectives, and organizational structure of NSS. CO3: To equip students with knowledge about NSS programmes, activities, and their relevance. CO4: To develop an understanding of community mobilization techniques and their importance in NSS activities. CO5: To cultivate an appreciation for volunteerism, shramdan (voluntary labor), and their role in community development initiatives.									
Note	All the theoretical contents shall be delivered through the practical workshop mode only. No class room teaching is encouraged in this course.									Hrs.
UNIT I	**Introduction and Basic Concepts of NSS** National Service Scheme (NSS) - history, philosophy, and fundamental concepts, aims and objectives, providing clarity on the organization's overarching goals. Symbols of NSS - Emblem, flag, motto, song, and badge; Organizational structure of NSS									
UNIT II	**NSS Programmes and Activities** Diverse programmes and activities conducted under the aegis of the National Service Scheme (NSS); Significance of commemorating important days recognized by the United Nations, Centre, State Government, and University; Examination of the methodology for adopting villages/slums and conducting surveys; Financial patterns of the NSS scheme									
UNIT III	**Community Mobilization** Dynamics of community mobilization within the framework of the National Service Scheme (NSS); Functioning of community stakeholders; The conceptual lens of community development.									
UNIT IV	**Volunteerism and Shramdan in the Indian Context: Roles and Motivations within the NSS Framework** Ethos of volunteerism and shramdan (voluntary labor) within the cultural context of India and the framework of the National Service Scheme (NSS); Motivations and constraints shaping volunteer engagement; Role of NSS volunteers in initiatives such as the Swatch Bharat Abhiyan and Digital India									
TextBooks/ Reference Books	1. Ministry of Youth Affairs and Sports, Government of India. (2022). National ServiceScheme (NSS) Manual. 2. Agarwalla, S. (2021). NSS and Youth Development. Mahaveer Publications 3. Bhattacharya, P. (2024). Stories Of NSS (English Version). Sahityasree. 4. Borah, R. and Borkakoty, B. (2022). NSS in Socioeconomic Development. Unika Prakashan. 5. Wondimu, H., & Admas, G. (2024). The motivation and engagement of student volunteersin volunteerism at the University of Gondar. *Discover Global Society*, *2*(1), 1-16. 6. Saha, A. K. (2002). Extension Education–The Third Dimension Needs and Aspirations									

of Indian Youth. *Journal of Social Sciences*, *6*(3), 209-214.
7. Mills, S. (2013). "An instruction in good citizenship": scouting and the historical geographies of citizenship education. *Transactions of the Institute of British Geographers*, *38*(1), 120–134. http://www.jstor.org/stable/24582445
8. Mishra, S. K., Sachdev, S., Marwaha, N., & Avasthi, A. (2016). Study of knowledge and attitude among college-going students toward voluntary blood donation from north India. *Journal of blood medicine*, 19-26.
9. Mukherji, B. (2007). Community Development in India. Orient Longmans.
10. History Background of NSS and its Philosophy, Aims and Objectives
11.https://www.osmania.ac.in/NSS%20URL/9.%20%20Historical%20Background%20of%20NSS%20and%20its%20Philosophy,%20Aim.pdf
12. In Defence of Nationalism https://www.mkgandhi.org/indiadreams/chap03.htm
13. Unlocking Youth Potential for Nation Building: Strengthening NYKS and NSS
14. https://www.undp.org/india/projects/strenghtening-nyks-and-nss

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
VAC201.5	**Disaster Management**	0	0	2	1	**Int**	**Uni**	**Total**	**Int**	**Uni**
						20	30	50	--	--
Course Outcomes (COs):	CO1: To provide understanding of the concepts related to disaster CO2: To highlight the importance and role of disaster management CO3: To enhance awareness of institutional processes and management strategies to mitigate the impacts of disasters									
Note	All the theoretical contents shall be delivered through the practical workshop mode only. No class room teaching is encouraged in this course.									Hrs.
UNIT I	**Concepts and Terminologies** Understanding key concepts of Hazards, disasters; Disaster types and causes (Geophysical, Hydrological, Meteorological, Biological and Atmospheric; Human-made); Global trends in disasters - Impacts (Physical, Social, Economic, Political, Environmental and Psychosocial); Defining Vulnerability (Physical Vulnerability; Economic Vulnerability; Social Vulnerability)									
UNIT II	**Key concepts of Disaster Management Cycle** Components of disaster management cycle (Phases: Response and recovery, Risk assessment, Mitigation and prevention, Preparedness planning, Prediction and warning); Disaster risk reduction (DRR), Community based disaster risk reduction									
UNIT III	**Initiatives at national and international level** Disaster Risk Management in India and at international level: Related policies, plans, programmes and legislation; International strategy for disaster reduction and other initiatives									
UNIT IV	**Emergency Management** Explosion and accidents (Industrial, Nuclear, Transport and Mining) - Spill (Oil and Hazardous material); Threats (Bomb and terrorist attacks) - Stampede and conflicts Training and Demonstration Workshops (at least two workshops) be organized in association with the NIDM, NDRF, NCDC, Param Military, Fire Brigade, CISF, local administration etc.									
TextBooks/ Reference Books	1. Sharma, S.C. (2022), Disaster Management, Khanna Book Publishing. 2. Clements, B. W., (2009): Disasters and Public Health: Planning and Response, Elsevier Inc. 3. Dunkan, K., and Brebbia, C. A., (Eds.) (2009): Disaster Management and Human Health Risk: Reducing Risk, Improving Outcomes, WIT Press, UK. 4. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi. 5. Ramkumar, Mu, (2009) Geological Hazards: Causes, Consequences and Methods of Containment, New India Publishing Agency, New Delhi. 6. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi. 7. Carter, N. (1991) Disaster Management: A Disaster Management Handbook. Asian Development Bank, Manila. 8. Govt. of India (2008) Vulnerability Atlas of India. BMTPC, New Delhi.									

	9. Govt. of India (2011) Disaster Management in India. Ministry of Home Affairs, New Delhi. 10. Matthews, J.A., (2002) Natural Hazards and Environmental Change, Bill McGuire, Ian Mason.
Web Resources	http://www.ndma.gov.in/en/ http://nidm.gov.in/ https://www.unisdr.org/ http://www.emdat.be https://www.weather.gov/safety/ https://www.preventionweb.net/risk/vulnerability

Course Code	Cours Title	L	T	P	Credit	Theory			Practical	
						Int	Uni	Total	Int	Uni
VAC201.6	**Vivek Vahini**	0	0	2	1	20	30	50	--	--
Course Outcomes (COs):	CO1: Enhancing scientific approach among students CO2: CirculateIntellectualism and Conscience among students and Society. CO3: Reducing discrimination based on race, gender and caste. CO4: Creating an egalitarian approach among students									
Note	Contribution of the concept of 'Vivekvahini' in Maharashtra was made by Late. Dr.Narendra Dabholkar & Prof. Dr. N. D. Patil, former chairman of Rayat Shikshan Sanstha, Satara,they put their heads together & the idea of inculcating scientific temper among college students was born. All the theoretical contents shall be delivered through the practical workshop mode only. No class room teaching is encouraged in this course.									Hrs.
Activities	Various student centering activities can be implemented viz. elocution competitions, essay writing competitions, quiz competitionand debate competition. Also, the wallpaper can be released to give a platform to the views of students. Participation in the awakening program which takes place in the area affiliated to thecollege.									