

DEPARTMENT OF DATA SCIENCE

FY DATA SCIENCE

Cross- Cutting in Curriculum

Course	Nature of cutting Issue	Sem & Modules	Pg. no
Business Communication BSC DS	Interpretation of Communication Business communication at workplace Information Ethics	SEM 1	18- 19
Environmental Science BSC DS	Introduction to Environmental Studies Ecology, Biodiversity	SEM 2	38 - 39
	Environmental Management	SEM2	38 - 39
BAMMC	Overview of Indian Society:	SEM 1	73 - 74
BAMMC	Concept of Disparity - 1:	SEM 1	73 - 74
BAMMC	Concept of Disparity - 2:	SEM 1	73 - 74
BA Culinary Arts	Personality Development	SEM 6	33
B. Sc	Environmental and Sustainable Tourism	SEM 5	38

Principal Sign



PRINCIPAL SIGN

University of Mumbai



AAMS_UGS/ICD/2022-23/११

CIRCULAR:-

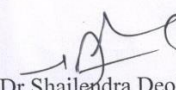
Sub:- B.Sc. (Data Science)) (CBCS).

Ref:- RB/MU-2020/CR-252/Edn-2/210, dated 16th February, 2021

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology is invited to this office circular No.UG/59 of 2021 dated 21st January, 2021 relating to the Syllabus & Ordinances of B.Sc. Data Science (Sem.I & II).

They are hereby informed that the recommendations made by the Ad-hoc Board of Studies in Computer Science at its meeting held on 15th June, 2022 vide item No. 1 and subsequently passed in the faculty and then by the Board of Deans at its meeting held on 5th July, 2022 vide item No. 6.15 (A) have been accepted by the Academic Council at its meeting held on 17th July, 2022 vide item No. 6.61 (A) and subsequently approved by the Management Council at its meeting held on 25th July, 2022 vide item No. 8 and that in accordance therewith, in exercise of the powers conferred upon the Management Council under Section 74(4) of the Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of 2017) for the **correction in the ordinance No.6606 for eligibility criteria for admission for the B.Sc. Data Science (Sem. I & II) (CBCS), from the academic year 2021-22.** (The same is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
15th September, 2022


(Dr. Shailendra Deolankar)
I/c. REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

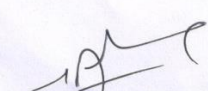
A.C/6.61 /11/07/2022
M.C./8/28/07/2022

No. AAMS_UGS/ICC/2022-23/११

15th September, 2022

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Science & Technology,
- 2) The Chairman, Ad-hoc Board of Studies in Computer Science,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Director, Department of Information & Communication Technology,
- 6) The Co-ordinator, MKCL.


(Dr. Shailendra Deolankar)
I/c. REGISTRAR

Copy for information and necessary action:-

1. The Deputy Registrar, College Affiliations & Development Department (CAD),
2. College Teachers Approval Unit (CTA),
3. The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),
4. The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA)
5. The Deputy Registrar, Research Administration & Promotion Cell (RAPC),
6. The Deputy Registrar, Executive Authorities Section (EA)
He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
7. The Deputy Registrar, PRO, Fort, (Publication Section),
8. The Deputy Registrar, Special Cell,
9. The Deputy Registrar, Fort Administration Department (FAD) Record Section,
10. The Deputy Registrar, Vidyanagari Administration Department (VAD),

Copy for information:-

1. The Director, Dept. of Information and Communication Technology (DICT), Vidyanagari,
He is requested to upload the Circular University Website
2. The Director of Department of Student Development (DSD),
3. The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,
4. All Deputy Registrar, Examination House,
5. The Deputy Registrars, Finance & Accounts Section,
6. The Assistant Registrar, Administrative sub-Campus Thane,
7. The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,
8. The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,
9. P.A to Hon'ble Vice-Chancellor,
10. P.A to Pro-Vice-Chancellor,
11. P.A to Registrar,
12. P.A to All Deans of all Faculties,
13. P.A to Finance & Account Officers, (F & A.O),
14. P.A to Director, Board of Examinations and Evaluation,
15. P.A to Director, Innovation, Incubation and Linkages,
16. P.A to Director, Department of Lifelong Learning and Extension (DLLE),
17. The Receptionist,
18. The Telephone Operator,

Copy with compliments for information to:-

19. The Secretary, MUASA
20. The Secretary, BUCTU.

AC – 11/7/2022
Item No. – 6.61

University of Mumbai



Syllabus for B.Sc. (Data Science)

(Sem. – I & II)

**(Choice Based Credit
System)**

(Introduced from the academic year 2021-22)

University of Mumbai



Syllabus for Approval

O: <u>6605</u> Title of Course	B.Sc. (Data Science)
O: <u>6606</u> Eligibility	Any student who has completed HSC or equivalent in Arts / Science / Commerce / MCVC with Mathematics or Statistics as one of the subjects. Any student who has completed Diploma in IT / CS/ Electrical / Electronics / Mechanical / Civil / Electronics and Telecommunication / Instrumentation and allied branches from MSBTE or equivalent board. Any student who has completed HSC or equivalent in Arts / Science / Commerce / MCVC without Mathematics or Statistics will have to undergo a bridge course of 30 hours on Mathematics and Statistics.
R: <u>9350</u> Duration of Course	3 years
R: _____ Intake Capacity	60
R: _____ Scheme of Examination	Choice Based Credit System
R: <u>9350-A</u> Standards of Passing	40%
No. of years/Semesters:	3 years – 6 Semesters
Level:	P.G. / U.G. / Diploma / Certificate (Strike out which is not applicable)
Pattern:	Yearly / Semester (Strike out which is not applicable)
Status:	Revised / New (Strike out which is not applicable)
To be implemented from Academic Year :	From Academic Year: 2021-22

Date:

Name: J.W. Bakal
Chairman of Ad-hoc BoS in
Computer Science

Signature:
Dr. Anuradha Majumdar
Dean, Science and Technology

Three Year Bachelor of Science Degree in Data

Science Preamble

Data Science refers to extraction of knowledge from large volumes of data that are structured or unstructured, which is continuation of data mining and predictive analytics. It involves different categories of analytical approaches for modelling various types of business scenarios and arriving at solution and strategies for optimal decision-making in marketing, finance, operations, organizational behavior and other managerial aspects. This new field of study breaks down into a number of different areas, from constructing big data infrastructure and configuring the various server tools that sit on top of the hardware, to performing the analysis and developing the right transformations to generate useful results.

Data Science is an inter disciplinary field that combines the magic of programming, mathematics and business. Combined with Machine Learning, it helps to identify a future trend which can be used to derive actionable insights for creating future impact. These skills will help for the role of a Data Scientist. As a Data Science aspirant, learner will be emphasising of the knowledge to share from the quantitative analysis to programming concept and extended to business intelligence. Data science can add value to any business which can use the data well.

Data Science consists of 3 parts namely:

Machine Learning: Machine Learning involves algorithms and mathematical models, chiefly employed to make machines learn and prepare them to adapt to everyday advancements.

Big Data: Everyday, we are producing so much of data in the form of clicks, orders, videos, images, comments, articles, RSS Feeds etc. These data is generally unstructured and is often called as Big Data. Big Data tools and techniques mainly help in converting this unstructured data into a structured form.

Business Intelligence: Each business has and produces too much data every day. This data when analysed carefully and then presented in visual reports involving graphs, can bring good decision making to life. This can help the management in taking the best decision after carefully delving into patterns and details the reports bring to life.

What Does a Data Scientist Do?

- Empower the management and controlling officers to make better decisions
- Direct actions based on trends, which in turn help to define new goals
- Identify opportunities
- Making decisions with quantifiable, data-driven evidence
- Test the decision taken
- Identify and refine the target audiences
- Recruit the right talent for the organisation

Programme Specific Outcomes

- Build a strong foundation of statistics for data science.
- Use all the features and new updates of Python and R for data science.
- Perform scientific and technical computing using the Python SciPy package and its su

b- packages Integrate, Optimize, Statistics, IO, and Weave.

- Gain expertise in mathematical computing using the NumPy and Scikit-Learn package
- Gain an in-depth understanding of data structure and data manipulation
- Understand and use linear and non-linear regression models and classification techniques for data analysis
- Obtain a comprehensive knowledge of supervised and unsupervised learning models such as linear regression, logistic regression, clustering, dimensionality reduction, K-NN and pipeline
- Master the concepts recommendation engine, time series modelling, gain practical mastery over principles, algorithms, and applications of Machine Learning
- Learn to analyse data using Tableau and Power BI and become proficient in building interactive dashboards
- Understand deep reinforcement learning techniques applied in Natural Language Processing
- Understand the different components of the Hadoop ecosystem and learn to work with HBase, its architecture and data storage, learning the difference between HBase and RDBMS, and use Hive and Impala for partitioning
- Understand MapReduce and its characteristics and learn how to ingest data using Sqoop and Flume

Courses

SEMESTER 1				
Course Code	Course Type	Course Name	Credits	Marks
USDS101	DSC	Descriptive Statistics	2	100
USDS1P1	DSC	Descriptive Statistics Practical	2	50
USDS102	DSC	Introduction to Programming	2	100
USDS1P2	DSC	Introduction to Programming Practical	2	50
USDS103	DSC	Web Technology	2	100
USDS1P3	DSC	Web Technology Practical	2	50
USDS104	AECC	Business Communication and Information Ethics	2	100
USDS1P4	AECC	ICT Practical	2	50
USDS105	DSC	Precalculus	2	100
USDS1P5	DSC	Precalculus Tutorials	2	50
		Total	20	750

SEMESTER2

Course Code	Course Type	Course Name	Credits	Marks
USDS201	DSC	Probability and Distributions	2	100
USDS2P1	DSC	Probability and Distributions Practical	2	50
USDS202	DSC	Database Management	2	100
USDS2P2	DSC	Database Management Practical	2	50
USDS203	DSC	R Programming	2	100
USDS2P3	DSC	R Programming Practical	2	50
USDS204	AECC	Environmental Science	2	100
USDS2P4	AECC	Project Presentation on Data Science in Environmental Science.	2	50
USDS205	DSC	Calculus	2	100
USDS2P5	DSC	Calculus Tutorials	2	50
Total			20	750

Proposed Courses in Semester 3, 4, 5 and 6 (Subject to change)

SEMESTER3

Course Code	Course Type	Course Name	Credits	Marks
USDS301	DSC	Testing of Hypothesis	2	100
USDS3P1	DSC	SPSS Practical	2	50
USDS302	DSC	Data Structures	2	100
USDS3P2	DSC	Data Structures Practical	2	50
USDS303	SEC	Microeconomics / Principles Of Management	2	100
USDS3P3	SEC	Case Studies on Microeconomics	2	50
USDS304	DSC	Data Ware housing	2	100
USDS3P4	DSC	Data Ware housing Practical	2	50
USDS305	DSC	Linear Algebra and Discrete Mathematics	2	100
USDS3P5	DSC	Tutorial on Linear Algebra and Discrete Mathematics	2	50
Total			20	750

SEMESTER4

Course Code	Course Type	Course Name	Credits	Marks
USDS401	DSC	Optimization Techniques	2	100
USDS4P1	DSC	Optimization Techniques Practical	2	50
USDS402	DSC	Big Data	2	100
USDS4P2	DSC	Big Data Practical	2	50

USDS403	SEC	E-Commerce and Business Ethics/Fundamentals of Accounting	2	100
USDS4P3	SEC	MATLAB Practical	2	50
USDS404	DSC	Algorithms in Data Science	2	100
USDS4P4	DSC	Algorithms in Data Science Practical	2	50
USDS405	DSC	Numerical Methods	2	100
USDS4P5	DSC	Numerical Methods Practical	2	50
		Total	20	750

SEMESTER5

Course Code	Course Type	Course Name	Credits	Marks
USDS501	DSC	Artificial Intelligence	2	100
USDS5P1	DSC	Artificial Intelligence Practical	2	50
USDS502	DSC	Business Research Methods	2	100
USDS5P2	DSC	Business Research Methods Practical	2	50
USDS503	DSC	Data Mining	2	100
USDS5P3	DSC	Data Mining Practical	2	50
USDS504	SEC	Campus to Corporate	2	100
USDS5P4	DSC	Project Dissertation	2	50
Elective1(Select Anyone of the following)				
USDS505a	DSE	Reinforcement Learning	2	100
USDS505b	DSE	Marketing and Retail Analytics		
USDS505c	DSE	Supply Chain and Logistics Analytics		
USDS505d	DSE	Robotic Process Automation		
Compulsory Practical				
USDS5P5	DSC	Data Visualization with Power BI/ Tableau	2	50
		Total	20	750

SEMESTER6

Course Code	Course Type	Course Name	Credits	Marks
USDS601	DSC	Machine Learning	2	100
USDS6P1	DSC	Machine Learning Practical	2	50
USDS602	DSC	Cloud Computing	2	100
USDS6P2	DSC	Cloud Computing Practical	2	50
USDS603	SEC	Internet of Things	2	100
USDS6P3	SEC	Internet of Things Practical	2	50
USDS604	DSC	Business Forecasting	2	100
USDS6P4	DSC	Business Forecasting Practical	2	50
Elective2(Select Anyone of the following)				
USDS605a	DSE	Financial Analytics		

USDS605b	DSE	Social Media Analytics	2	100
USDS605c	DSE	Knowledge Management		
USDS605d	DSE	Data Security and Compliance		
Compulsory(Project Implementation)				
USDS6P5	DSC	Project Implementation	2	100
		Total	20	800

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Semester I

USDS101: Descriptive Statistics

B.Sc.(Data Science)		Semester–I	
Course Name: Descriptive Statistics		CourseCode:USDS101	
Periods perweek(1Period is50minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- To understand the use of data for tabulating and analyze statistical information given in descriptive form with attributes.
- To use graphical techniques as well as to compute various measures of central tendency.
- To compute various measures of dispersion, skewness and kurtosis and to calculate range of variables and the deviation of specific data point.
- To compute the correlation coefficient for bivariate data and Calculate the simple linear regression equation for a set of data.
- To Describe and verify mathematical considerations for analyzing time series.

Unit	Details	Lectures
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I	1.Introduction to Statistics and use in Business: a) Meaning of Statistics as a Science, Importance of Statistics, b) Scope of Statistics: In the field of Industry, Biological Sciences, Medical Sciences, Economics Sciences, Social Sciences, Management Sciences, Agriculture, Insurance, Information Technology, Education and Psychology. c) Statistical organizations in India and their functions: CSO, ISI, NSS, IIPS (Devnar, Mumbai), Bureau of Economics and statistics. d) Case Study 2.Types of Data and Data Condensation: a) Method of sampling: Concept of population and sample. Finite ,Infinite population, Notion of SRS, SRSWOR and SRSWR b) Types of Characteristics, Different types of scales: nominal, ordinal, interval and ratio scale. Linear and circular scale. c) Types of Data: Primary data, Secondary data, Collection of data and concept of a questionnaire and a schedule, Cross-sectional data, time series data, failure data, industrial data, and directional data. d) Tabulation. e) Dichotomous classification- for two and three attributes, Verification for consistency. f) Association of attributes: Yule's coefficient of association Q. Yule's coefficient of Colligation, g) Notion of a statistical population: Finite population infinite population, homogeneous population and heterogeneous population. Notion of sample, random sample and non-random sample.	12
	3.Presentation of Data a) Univariate frequency distribution of discrete and continuous variables. Cumulative frequency distribution and relative frequency distribution. b) Graphical representation of frequency distribution by Histogram, frequency polygon, Cumulative frequency curve. Stem and leaf diagram c) Checksheet, Paratodiagram	

II	4.Measuresofcentral tendencies a) Conceptofcentral tendencyof data.Requirementsofgoodmeasure b) Locationalaverages:Median,Mode,andPartitionValues:Quartiles, Deciles,andPercentiles,BoxPlot,Percentileranks c) MathematicalaveragesArithmeticmean(Simple,weightedmean,combinedmean), Geometricmean, Harmonicmean d) Empiricalrelationbetweenmean, medianand mode e) Meritsanddemeritsofusingdifferentmeasures&theirapplicability f) PartitionValues:Quartiles,DecilesandPercentiles,BoxPlot,Percentile ranks 5.Measuresof Dispersion,Skewness&Kurtosis a) Conceptofdispersion.Requirementsofgood measure. b) Absolute and Relative measures of dispersion: Range, QuartileDeviation,Mean absolute deviation, Standarddeviation. c) VarianceandCombinedvariance,rawmomentsandcentralmomentsand relations between them. Their properties d) Concept of Skewness and Kurtosis: Measures of Skewness: KarlPearson's,Bowley'sandCoefficientofskewnessbasedonmoments.MeasureofKurtosis	12
III	6.Meansquare deviation: a) Definition, minimality property of mean square deviation (withproof), b) Variance and standard deviation: Definition, merits and demerits, effectofchangeoforiginandscale,combinedvariance(derivationfor 2 groups), combined standard deviation, generalization for ngroups. c) Measuresofdispersionforcomparison:coefficientofrange,coefficient of quartile deviation and coefficient of mean deviation,coefficientofvariation (C.V.)	12
IV	7.Correlationandregression analysis a) ScatterDiagram,Productmomentcorrelationcoefficientanditsproperties.Spearman'sRankcorrelation.(Withandwithoutties) b) Conceptoflinearregression.Principleofleast squares.Fittingastraight lineby method ofleast squares. c) Relation between regression coefficients and correlationcoefficient. d) Fittingofcurvesreducibleto linearformbytransformation.Conceptand useofcoefficient of determination(R^2).	12
	e) Fittingaquadratic curvebymethodofleast squares. f) Casestudy	
V	TimeSeries a) Definitionoftimeseries .Itscomponent.Modelsoftimeseries. b) Estimation of trend by: i) method of Freehand curve ii) methodof semi average iii) Method of Moving average iv) Method of leastsquares(linear trend only) c) Estimationofseasonalcomponentbyi)methodofsimpleaverage ii)Ratiotomovingaverage iii)Ratiototrend method d) CaseStudy	12

BooksandReferences:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Statistical Methods, An Introductory Text,	Medhi J.	New Age International Ltd.	Second Edition	
2.	Basic Statistics	Agarwal B. L.	New Age International Ltd.		
3.	Theory and Problems of Statistics,	Spiegel M. R.	Tata McGraw-Hill.		
4.	Fundamentals of Statistics, Volume II	Goon A. M., Gupta M. K., Dasgupta B.	The World Press Private Limited, Calcutta.		
5.	Complete Business Statistics	Aczel Sounder Pandian	Tata McGraw Hill		
6.	Excel Data Analysis Modeling and Simulation	Hector Gurrero	Springer	Second Edition	
7.	Data Analysis and Decision Making	Albright, Wilston, Zappe	Thomson		

Course Outcomes:

After completion of the course, a student should be able to:

- To understand the use and importance of statistical data by tabulating and implementing sampling methods.
- Able to identify association between the variables as well as computing consistent and inconsistent data.
- Able to compute level of measures and apply as well as interpret data into graphs.
- Apply measure of central tendency to minimize the sum of squared deviation.
- Able to understand the basic assumption behind regression analysis and determine the model significance as well as able to apply various techniques for the modelling.

USDS1P1: Descriptive Statistics Practical

B.Sc(Data Science)		Semester–I	
Course Name: Descriptive Statistics Practical		Course Code: USDS1P1	
Periods per week (1 Period of 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- To enhance excel based data modeling skills.

- To understand Data Conversion, data categorization, selection of appropriate data category and Collection and to utilize excel based data modeling skills.
- To compute Logical and Mathematical Averages, measures of dispersion, compute skewness, moments and kurtosis and to use graph from graphical tool.
- To represent data on the graph, Cumulative frequency, subgroup of data with Histogram and subgroup of data with Histogram as well as with bar chart.
- To analyze data about the frequency of problems/Cause of problem and to use financial function.
- To compute variance, coefficient of variation, standard deviation of two subgroups, correlation and co-variance.
- To implement statistical function on series of data and forecasting techniques.

List of Practical: (Can be done in MS-Excel or any Spreadsheet)	
1.	Introduction to Excel
a.	Understanding Data Tools
b.	Understanding Formula Tools, insert function all library using insert function
c.	Add-Ins Analysis Toolpacks
2.	Using Formulae and Charts
a.	Formula writing, Functions, using Cell reference
b.	Understanding Insert Tool: Chart Tools, Different types of charts and their use
3.	Data Entry and manipulation
a.	Tools for data entry and accuracy: Quick Access Toolbar customization, Form tool.
b.	Data Transposition to Fit Excel (as An Array).
c.	Data Conversion with the Logical IF, VLOOKUP, HLOOKUP. Pivot table, Pivot chart.
d.	Data Conversion of Text from Non-Excel Sources, Using Text To Column (From Data tool)
e.	Data Queries with Sort, Filter, and Advanced Filter Exact function data entry comparison
4.	Data Validation
a.	Specifying a valid range of values for a cell
b.	Specifying a list of valid values for a cell
c.	Specifying custom validations based on formula for a cell
5.	Measures of central tendency
a.	Calculating Mean, Median, Mode, Minimum, Maximum, range with cell reference
b.	Using Summary statistics
c.	Calculate A.M., G.M., H.M.
d.	State the Findings of all above exercise.
6.	Measures of Dispersion, Skewness & Kurtosis
a.	Calculate Range, Quartile Deviation, Mean absolute deviation, Standard deviation with cell reference

b.	Using summary statistics Measures of Skewness Coefficient of skewness based on moments. Measure of Kurtosis.
c.	Graphical representation of Skewness.
d.	State the Findings of exercise.
7.	Graphical Presentation with Excel -1
a.	Producing a Histogram
b.	Improving the Graph
c.	Producing a Cumulative Frequency Diagram
d.	Producing a Histogram of subgroup of data
8.	Graphical Presentation with Excel-2
a.	Producing a bar chart of subgroups of data
b.	Perato chart
c.	Combined variance (derivation for 2 groups), Combined standard deviation.
d.	Coefficient of variation (C.V.).
9.	Correlation
a.	Use of formula for calculating correlation and Co-variance.
b.	Use of error checking (Using Exact(), IF)
c.	Use of frequently used financial functions (e.g. NPV) with suitable example of correlation.
d.	State the Findings of all above exercise.
10.	Regression analysis
a.	Using Summary statistics/Cross sectional Data: Descriptive Statistic
b.	Linear Regression and visual analysis (Chart)
c.	Multiple Regression equation with coefficient standard error and visual chart
d.	State the Findings of all above exercise.

Course Outcomes:

After completion of the course, a student should be able to:

- Use Microsoft Excel for business and data analytics, applying insert function library, make use of “Add-Ins Tool pack” for different statistical and mathematical function, learn to use formula and function with cell reference and able to use different types of charts suitable to the data.
- Do Data Entry and manipulation using data context, to transpose the tabular data, convert data into tabular format and able to use the excel tools for data categorization.
- Discover Measures of central tendency by using analysis tools and formula and able to state the conclusion.
- Find Measures of Dispersion, Skewness & Kurtosis by using formula, calculate statistics measures using add-ins analytical tools, Able to use graph/chart from chart tool and deriving the conclusion of the experiment.
- Display Graphical Presentation with Excel by using graph/Chart, templates to improve presentation of data, represent cumulative frequency, data analysis, understand “cause analysis”, make use of formula and analytical tool to compute combined variance and Standard Deviation and compute coefficient of variation.
- Find Correlation by applying statistical formula and analytical tool, identifying wrong data entries, make use of financial function using insert and deriving conclusion of the experiment.

- Do Regression analysis by predicting using data analysis tools, make use of forecasting techniques, Able to use multiple regression using time series data and deriving conclusion of the experiment.

USDS102: Introduction to Programming

B.Sc (Data Science)		Semester–I	
Course Name: Introduction to Programming		Course Code: USDS102	
Periods per week (1 Period is 50 minutes)		5	
Credit		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- Learn Programming fundamentals using Python
- Understand the concepts and usage of data types, variables and other basic elements
- Learn about using operators and control statements in Python
- Learn about using arrays and strings in Python.
- Learn about using IPython architecture for Python.
- Introduce data Science Tools and plot data using appropriate Python visualization libraries

Unit	Details	Lectures
I	Introduction to Python Language: Overview, Features of Python, Execution of a Python Program, Innards of Python, Frozen Binaries, Python Interpreter, Comparison of Python with C and Java, Installing Python, Writing & Executing, IDLE Data Types, Variables And Other Basic Elements: Comments, Docstrings, Data types- Numeric, Compound, Boolean, Dictionary, Sets, Mapping, Basic Elements of Python, Variables Input and Output Operations: Input Function, Output Statements, Command Line Arguments Control Statements: Control Statements- Loop Statement, The else Suite, break Statement, continue Statement, pass Statement, assert Statement, return Statement	12

II	Functions:Defining&CallingaFunction,ReturningResults,Returning Multiple Values,Built-inFunctions,ParametersandArguments,RecursiveFunctions,AnonymousorLambdaFunctions Operators:Arithmeticoperators,Assignmentoperators,Unaryminusoperator,Relationaloperators,Logicaloperators,Bitwiseoperators,Membership operators, Identity operators, Precedence ofOperators,Associativity ofOperators Arrays:CreatingArrays,IndexingandSlicing,BasicArrayOperations, Arrays Processing, Mathematical Operations on Array,AliasingArrays,SlicingandIndexinginNumPyArrays,Basic Slicing. Advanced Indexing. Dimensions of Arrays, Attributes of anArray	12
	Strings:CreatingStrings,FunctionsofStrings,WorkingwithStrings,Length of a String, Indexing & Slicing, Repeating& ConcatenationofStrings,CheckingMembership,ComparingStrings,RemovingSpaces,FindingSubstrings,CountingSubstrings,StringsareImmutable,SplittingandJoiningStrings,ChangingCase,Checking Starting and Ending of a String, Sorting & Searching in the Strings,FormattingtheStrings, Working withCharacters	
III	ListsandTuples:Lists,ListFunctionsandMethods,ListOperations,Tuples Dictionaries:CreatingaDictionary,OperatorsinDictionary,Dictionary Methods,UsingforLoopwithDictionaries,OperationsonDictionaries,OrderedDictionaries RegularExpressions:WhatisaRegularExpression?SequenceCharactersinRegularExpressions,QuantifiersinRegularExpressions,SpecialCharactersinRegularExpressions,UsingRegular Expression on Files, Retrieving Information from an HTMLFile Date and Time in Python: Date and Time, Date and Time Now,Combining Date and Time, Formatting Dates and Times, FindingDurationsusing“timedelta”,ComparingTwoDates,SortingDates, StoppingExecutionTemporarily,KnowingtheTimetakenbyaProgram, Working withCalendar Module	12
IV	IPython:BeyondNormalPython,HelpandDocumentationinIPython, Keyboard Shortcuts in the IPython Shell, IPython MagicCommands,InputandOutputHistory,IPythonandShellCommands,ErrorsandDebugging, Profiling andTiming Code Introduction to NumPy: Understanding Data Types in Python, TheBasics of NumPy Arrays, Computation on NumPy Arrays: UniversalFunctions,Aggregations:Min,Max,andEverythingInBetween,ComputationonArrays:Broadcasting,Comparisons,Masks,and Boolean Logic, FancyIndexing, Sorting Arrays, Structured Data:NumPy'sStructured Arrays	12

V	Data Manipulation with Pandas: Introducing Pandas Objects, DataIndexingandSelection,OperatingonDatainPandas,HandlingMissi ng Data, Hierarchical Indexing, Combining Datasets: Concatand Append, Combining Datasets: Merge and Join, Aggregation andGrouping, Pivot Tables, Vectorized String Operations, Working withTimeSeries. High-PerformancePandas: eval()and query() Visualization with Matplotlib: Simple Line Plots, Simple ScatterPlots, Visualizing Errors, Density and Contour Plots, Histograms,Binnings,andDensity,CustomizingPlotLegends,Customiz ingColorbars,MultipleSubplots,TextandAnnotation,CustomizingTick s,CustomizingMatp lotlib:ConfigurationsandStylesheets, Three-DimensionalPlottinginMatplotlib,Geo graphicDatawithBasemap,Visu alizationwith Seaborn	12
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BooksandReferences:					
Sr.No.	Title	Author/s	Publisher	Edition	Year
1.	Programming throughPython	M. T. Savaliya, R.KMaurya,G.MMa gar	StareduS olutions	1 st	2018
2.	PythonDataScience Handbook	JakeVanderPlas	O'Reilly Media	1 st	2016
3.	LetUsPython	Y.Kanetkar,	BPB	1 st	2019
4.	Programming in Python3	MarkSummerfield	PearsonE ducation	2 nd	2018
5.	LearningPython	LutzM	O'Reilly-Shroff	5 th	2013
6.	BeginningPython	MagnusLieHetland	Apress	2 nd	2009
7.	StarPython	StarCertification	StarCertifica tion	1 st	2018

CourseOutcome:

Uponthesuccessfulcompletion of thiscourse, thestudentwill beable to achive:

- Proficiencyinusingandapplyingvariousdatatypesinc luding,string,arraylist,tupleanddictionary.
- Abilitytousereregularexpressionstoperform complexoperationsinlesscode.
- LearningtomakeuseofdateandtimeinPythonforvariousapplications.
- ProficiencyinusingIPytho narchitectureforDataScienceApplications.
- Knowledgeabout useofvariousdatasciencetools

USDS1P2:IntroductiontoP programmingPractical

B.Sc(DataScience)		Semester–I	
CourseName:IntroductiontoProgrammingPractical		CourseCode:USDS1P2	
Periodsperweek(1Period is50minutes)		3	
Credits		2	
		Hours	Marks
EvaluationSystem	PracticalExamination	2½	50
	Internal	--	--

Course Objectives:

- To explore Python Programming elements for developing interactive programs.
- To gain insight about the concept of functions and to explore the data storage of similar types with their features.
- To learn about special operators, Arrays and lists and operation on them in Python.
- To explore Dictionaries, Sets, Text processing and operation on them.
- To learn about date and time module in Python
- To explore popular data science tool, packages for data visualization.

List of Practical:	
1.	Introduction to Python Language
a.	Write a Python program to explore various data types including numeric types, Boolean types and compound types.
b.	Write a Python program to perform Input and Output Operations.
c.	Write a Python program to demonstrate looping in python and use of break statement and continue statement
2.	Functions
a.	Write a Python program to define and use functions
b.	Write a Python program to demonstrate the use of Built-in Functions.
c.	Write a Python Program to implement Lambda Functions.
3.	Arrays and String
a.	Write a Python Program to implement arrays for storing homogeneous data items. Apply indexing and slicing operations to access elements of array.
b.	Write a Python Program to demonstrate operations and properties of string data types.
c.	Write a Python Program implement and demonstrate the use of Membership operators and Identity operators
d.	Write a Python Program to implement Numpy for handling multidimensional arrays.
4.	List and Tuples
a.	Write a Python Program to create list, apply various functions to it.
b.	Write a Python Program to demonstrate concept of aliasing and cloning.
c.	Write a Python Program to implement tuples for storing data. Verify the immutability property of tuples.
5.	Dictionaries and Sets
a.	Write a Python Program to implement Dictionary and operations on dictionaries
b.	Write a Python Program to create sets and various operations on it.
6.	Regular Expressions
a.	Write a Python Program for implementing various methods for searching and replacing operations.
b.	Write a Python Program for Retrieving Information from an HTML File
7.	Date and Time
a.	Write a Python Program to compare dates and implement calendar module
8.	Using IPython

a.	Using IPython and Jupyter notebook
b.	Debugging errors in IPython.
9.	Using the NumPy Package
a.	Programs using NumPy Package and different functions available in it.
10.	Using the pandas package
a.	Programs using Pandas Package and different functions available in it.

Course Outcomes:

After completion of the course, a student should be able to:

- Knowledge about input and output functions in python and have ability to use loops and control their execution.
- Ability to develop modular Programs using functions and data types like string, array and list of Python.
- Ability to develop modular Programs using Date and Time of Python.
- Interact with IPython and Jupyter notebook.
- Make use of NumPy Package and different functions available in it.
- Able to write code using Pandas Package and different functions available in it.

USDS103: Web Technology

B.Sc(Data Science)		Semester–I	
Course Name: Web Technology		Course Code: USDS103	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- Introducing the basic concepts of Internet and web design to learners.
- Providing brief knowledge about HTML5 concepts.
- Giving insight of the Page layout and navigation with HTML5.
- Making students aware about use of Tables, Forms and Media with HTML5.
- Providing knowledge of web page design using CSS.
- Teaching data validation using JavaScript.
- Giving knowledge about transmission of data on web page using JSON object.

Unit	Details	Lectures
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I	Internet and the World Wide Web: What is Internet? Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, videoconferencing, e-business. Internet service providers, domain name server, internet address, World Wide Web (WWW): World Wide Web and its evolution, uniform resource locator (URL), browsers – internet explorer, Netscape navigator, opera, Firefox, chrome, Mozilla. search engine, web server – apache, IIS, proxy server, HTTP protocol What Is Web Design?: Defining Web Design, Web Design Themes, Learning Web Design. User-Centered Design: Usability, Who Are Web Users? Common User Characteristics, Memory, Response and Reaction Times, Dealing with Stimulus, Movement Capabilities, The User's World, General Types of Users, Web Conventions, Accessibility, Building a Usable Site HTML5: Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors.	12
II	HTML5 Page layout and navigation: Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions. HTML5 Tables, Forms and Media: Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms:	12
	creating basic form, using checkboxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.	

III	Introduction to Style Sheets : Understanding Styles, Constructing Style Rules, Creating Styles for Nested Tags, Creating and IDs for Applying Styles, Applying Styles to Hyperlinks, Creating and Linking to External Style Sheets Formatting Text by Using Style Sheets: Specifying a Font Family, Specifying a Font Size and Color, Applying Bold and Italics, Applying Strikethrough and Underlining, Creating Inline Spans, Adjusting Spacing Between Letters Formatting Paragraphs by Using Style Sheets: Indenting Paragraphs, Applying a Border to a Paragraph, Specifying a Border Style, Setting Border Padding, Specifying Border Width and Color, Formatting Border Sides Individually, Setting All Border Attributes at Once, Specifying the Horizontal Alignment to a Paragraph, Specifying Vertical Space within a Paragraph Displaying Graphics: Selecting a Graphics Format, Preparing Graphics for Web Use, Inserting Graphics, Arranging Elements on the Page, Controlling Image Size and Padding, Hyperlinking from Graphics, Using Thumbnail Graphics, Including Alternate Text for Graphics, Adding Figure Captions	12
IV	JavaScript: Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, RegExp Document and its associated objects: document, document object methods, Link, Area, Anchor, Image, Layer Events and Event Handlers : General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDoubleClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload	12
V	JSON: Introduction, JSON Grammar, JSON Values, JSON Tokens, Syntax, JSON vs XML, Data Types, Objects, Arrays, Creating JSON, JSONObject, Parsing JSON, Persisting JSON, Data Interchange, JSON HTML, JSONP	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edi ⁿ	Year
1.	HTML5 Step by Step	Fai the Wempen	Microsoft Press		2011
2.	Web Design The Complete Reference	Thomas Powell	TMH		2009
3.	Head First HTML5 programming	Eric Freeman	O'Reilly		2013
4.	JavaScript 2.0: The Complete Reference	Thomas Powell and Fritz Schneider	TMH	2 nd	2004
5.	Beginning JSON	Ben Smith	Apress	1 st	2015

Course Outcomes:

After completion of the course, a student should be able to:

- Understand the meaning of the basic terminologies of web technology and explore, use the HTML5 concepts. Understand the basic requirement of web design.
- Understand and use the Page layout, Navigation, Tables, Forms and Media features of HTML5.
- Understand and use Cascading Style sheet for beautifying the web pages.
- Understand and use the JavaScript for validation of user forms in web pages.
- Understand and use the technique of transmitting data between a server and web application using JSON.

USDS1P3: Web Technology Practical

B.Sc(Data Science)		Semester–I	
Course Name: Web Technology Practical		Course Code: USDS1P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

Provide the hands on the HTML5, CSS, JavaScript and JSON technologies for designing the attractive web pages with dealing user data validation and transferring the values among the web pages and servers.

- Introducing basics of HTML5 to learners.
- Giving insight of the Page layout and navigation with HTML5.
- Making students aware about use of Tables, Forms and Media with HTML5.
- Providing knowledge of web page design using CSS.
- Teaching data validation using JavaScript.
- Giving knowledge about transmission of data on web page using JSON Object.

List of Practical:	
1.	Use of Basic Tags:
a.	Design a web page using different text formatting tags.
b.	Demonstrate use of Font tag with its attributes and HTML various color options in web page.
c.	Design a web page with links to different pages and allow navigation between web pages.
2.	Navigation, list and paragraph:
a.	Design a web page to demonstrate text-based navigation bar.
b.	Demonstrate use of lists and backgrounds in web page.
c.	Demonstrate use of paragraph and its associated tags in web page.
3.	Lists, images and semantics:
a.	Demonstrate use of multiple image tag in web page.
b.	Design a web page with Image maps.
c.	Design a web page demonstrating use of various semantic tags

4.	Multimedia and User controls:
a.	Design a webpage with a form that uses all types of user controls.
b.	Design a webpage embedding with multimedia features.
c.	Design a 3 page static website with appropriate tags and attributes.
5.	CSS with list, links and table:
a.	Create and use different style rules with available types of lists.
b.	Create and use different style rules with hyperlinks.
c.	Create and use different style rules with tables.
6.	CSS with font, paragraph and types:
a.	Create and use different style rules with font elements.
b.	Create and use different style rules with Paragraph elements.
c.	Demonstrate the use of inline, internal and external CSS in one webpage.
7.	JavaScript: Validating User fields
a.	Demonstrate the use of Document object methods.
b.	Using javascript, demonstrate validating Text Input Fields, Drop-down Lists and Checkboxes.
c.	Using javascript, demonstrate validating Radio buttons and Validating Multi-Select Boxes.
8.	JavaScript : Handling the events
a.	Using javascript, demonstrate the use of onAbort, onBlur, onChange, onClick, onDoubleClick events.
b.	Using javascript, demonstrate the use of onDragDrop, onError, onFocus events.
c.	Using javascript, demonstrate the use of onKeyDown, onKeyPress, onKeyUp, onLoad, onReset, onResize, onSelect, onSubmit, onUnload events.
d.	Using javascript, demonstrate the use of onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove events.
e.	Using javascript, demonstrate the use of onKeyDown, onKeyPress, onKeyUp, onLoad, onReset, onResize, onSelect, onSubmit, onUnload events.
f.	Demonstrate complete validation of User Registration form using appropriate fields of html and events of javascript.
9.	JSON Basics
a.	Creating JSON
b.	Parsing JSON
c.	Persisting JSON
10.	Working with JSON
a.	Demonstrate use of JSON objects in array, print array on webpage using document object.
b.	Read data from json file and convert it into a JavaScript object and display the data in webpage using document object.
c.	Demonstrate messages formatting using JSON.

Course Outcomes:

After completion of the course, a student should be able to:

- Use basic tags such as font, link and text formatting tags.
- Use and apply Navigation, lists, images etc in webpages.
- Use User controls and embed Multimedia in webpage.
- Use and apply CSS with list, links, font style etc. in webpage.
- Use and apply JavaScript for Validating User fields on webpage.
- Create, parse and persist the JSON object and extract and use its values on webpage.
- Use JSON object with arrays and message formatting on webpage.

USDS104: Business Communication and Information Ethics

B.Sc(Data Science)		Semester–I	
Course Name: Business Communication and Information Ethics		Course Code: USDS104	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- To discuss various components of communication, explain how non-verbal communication techniques enhance communication and explain the barriers to communication.
- To discuss various business activities which are essential at workplace. To explain business communication covering the structure and layout of a letter, planning of a letter and use of language.
- To explain the use of agenda and minutes for effective functioning of any organisation.
- To direct the learners' attention to the significance of effective writing and the importance and structure of reports.
- To explain to interpret information ethics (IE) as the branch of the philosophy of information that investigates, in a broad sense, the ethical impact of Information and Communication Technologies (ICTs) on human life and society.

Unit	Details	Lectures
I	Interpretation of Communication Basics of communication, Non-verbal communication, Barriers to communication. Business communication at workplace Letter components and layout, Planning a letter, Process of letter writing.	12
II	Business communication at workplace Email communication, Memos and memo reports, Employment communication. Notice, Agenda and minutes of meeting, Brochures.	12
III	Report Writing: Effective writing, Types of business reports, Structure of reports, Gathering Information.	12

IV	Report Writing: Organisation of material, writing abstracts and summaries, Writing definitions, Visual aids, User Instruction Manual.	12
V	Information Ethics Ethics after the information revolution, what is information ethics? The method of abstraction.	12

Books and References:					
Sr.No.	Title	Author/s	Publisher	Edition	Year
1.	Professional Communication	Aruna Koneru	Tata McGraw Hill	--	2008
2.	The Ethics of Information	Luciano Floridi	Oxford University Press	--	2013
3.	Business Communication	A. C. "Buddy" Krizan, Patricia Merrier, Joyce Logan, Karen Williams	Thomson	7e	2008

Course Outcomes:

After completion of the course, a student should be able to:

- Communicate effectively in non-verbal way, draft and write effective business letters.
- Effectively carry out communication activities of business by following email etiquettes, drafting memos
- Write elegant business reports and prepare user instruction manual.
- Apply the information ethics in all walks of life.
- Become a good communicator in life.

USDS1P4: ICT Practical

B.Sc(Data Science)		Semester-I	
Course Name: ICT Practical		Course Code: USDS1P4	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Objectives:

- To help the learners become competent and confident users of ICT who can make efficient, effective and creative use of basic application software in their everyday activities.
- To encourage the learners to become critical and reflective users of ICT who can evaluate the capabilities and limitations of the technology and of social, technical, political, ethical, organisational and economical principles associated with its use.
- To prepare the learners for the society of tomorrow by making them adaptable users of ICT who

have the necessary openness and flexibility of mind to be able to adjust to future changes in the technology.

- To encourage the learners to develop the appropriate social skills that are essential for co-operative and collaborative learning based around ICT.
- To empower ICT disadvantaged learners by ensuring sufficient access for those learners who have little out-of-school opportunities to use the technology

List of Practical:	
1.	Word Processor: Using word processor for letters, documentation and reports with proper formatting and advanced features.
2.	Presentation Software: Using presentation software for preparing elegant presentations with voice and videos and giving different effects to make it more interesting and catchy.
3.	Using Google docs and forms
4.	Using online collaboration and video conferencing tools
5.	Using screen recording and audio tools
6.	Using video editing tools
7.	Using Google Maps, Google Streetview, Bing Maps
8.	Using Social Media (Facebook, Instagram, Twitter, LinkedIn, youtube, snapchat, reddit, quora, dig, Pinterest, flipboard, Wordpress, Tumblr, Medium) for business and learning
9.	Using plagiarism software
10.	Using ICT in governance, agriculture and healthcare

Course Outcomes:

After completion of the course, a student should be able to:

- Effectively use the ICT software for different purposes in all walks of life.
- Develop the appropriate personal skills that are essential for independent learning based around ICT
- Develop their potential to their fullest by facilitating the acquisition of knowledge; by helping the learner concentrate on higher order cognitive tasks rather than on lower order routine tasks and by positively affecting the attitude of the learner towards further learning
- Facilitate better communication between the learners thereby promoting greater social understanding and harmony
- Effectively use the ICT in governance, agriculture and healthcare.

USDS105: Precalculus

B.Sc(DataScience)		Semester– I	
CourseName:Precalculus		CourseCode:USDS105	
Periodsperweek(1Period is50minutes)		5	
Credits		2	
		Hours	Marks
EvaluationSystem	TheoryExamination	2½	75
	Internal	--	25

CourseObjectives:

- Tomasterthenumberfundamentals,equationsanddifferenttypesofmathematicalfunctions
- Toreview andexplainthetrigonometryandgainexpertise trigonometricidentities.
- Tounderstandanalyticaltrigonometryandinverse functions.
- Togivethedetailed knowledgeaboutcomplexnumbers, vectorsandmatrices.
- Tounderstandtheconics,sequencesandseriesand

Unit	Details	Lectures
I	Fundamentals: Real Numbers, Exponents and Radicals, Algebraic Expressions, Rational Expressions, Equations, Modeling with Equations, Inequalities, Coordinate Geometry, Graphing Calculators; Solving Equations and Inequalities Graphically, Lines, Making Models Using Variation. Functions: What is function? Graphs of Functions, Getting Information from the Graph of a Function, Average Rate of Change of a Function, Transformations of Functions, Combining Functions, One-to-One Functions and Their Inverses. Polynomial and Rational Functions: Quadratic Functions and Models, Polynomial Functions and Their Graphs, Dividing Polynomials, Real Zeros of Polynomials, Complex Numbers, Complex Zeros and the Fundamental Theorem of Algebra, Rational Functions.	12
II	Exponential and Logarithmic Functions: Exponential Functions, The Natural Exponential Function, Logarithmic Functions, Laws of Logarithms, Exponential and Logarithmic Equations, Modelling with Exponential and Logarithmic Functions. Trigonometric Functions: Unit Circle Approach: The Unit Circle, Trigonometric Functions of Real Numbers, Trigonometric Graphs, Inverse Trigonometric Functions and Their Graphs, Modelling Harmonic Motion Trigonometric Functions: Right Triangle Approach: Angle Measure, Trigonometry of Right Triangles, Trigonometric Functions of Angles, Inverse Trigonometric Functions and Right Triangles, The Law of Sines, The Law of Cosines.	12
III	Analytic Trigonometry: Trigonometric Identities, Addition and Subtraction Formulas, Double-Angle, Half-Angle, and Product-Sum Formulas, Basic Trigonometric Equations, More Trigonometric Equations	12
	Sinusoidal Functions: A special class of functions, Sketching a sinusoidal graph, Functions not in standard sinusoidal form, sinusoidal behaviour. Inverse Circular Functions: Solving three equations, inverse Circular functions, applications, solving trigonometric equations	

IV	Polar Coordinates and Parametric Equations: Polar Coordinates, Graphs of Polar Equations, Polar Form of Complex Numbers, De Moivre's Theorem, Plane Curves and Parametric Equations Vectors in Two and Three Dimensions: Vectors in Two Dimensions, The Dot Product, Three-Dimensional Coordinate Geometry, Vectors in Three Dimensions, The Cross Product, Equations of Lines and Planes Systems of Equations and Inequalities: Systems of Linear Equations in Two Variables, Systems of Linear Equations in Several Variables, Matrices and Systems of Linear Equations, The Algebra of Matrices, Inverses of Matrices and Matrix Equations, Determinants and Cramer's Rule, Partial Fractions, Systems of Nonlinear Equations, Systems of Inequalities	12
V	Conic Sections: Parabolas, Ellipses, Hyperbolas, Shifted Conics, Rotation of Axes, Polar Equations of Conics Sequences and Series: Sequences and Summation Notation, Arithmetic Sequences, Geometric Sequences, Mathematical Finance, Mathematical Induction, The Binomial Theorem Limits: A Preview of Calculus: Finding Limits Numerically and Graphically, Finding Limits Algebraically, Tangent Lines and Derivatives, Limits at Infinity, Limits of Sequences, Areas	12

Books and References:				
Sr. No.	Title	Author/s	Publisher	Year
1.	Precalculus – Mathematics for Calculus	James Stewart, Lothar Redlin, Saleem Watson	Cengage Learning	2013
2.	Precalculus	David H. Collingwood, K. David Prince, Matthew M. Conroy	Free Software Foundation	2011
3.	Precalculus Demystified	Rhonda Huettnermueller	Tata McGraw Hill	2005
4.	Contemporary Precalculus: A Graphing Approach	Thomas W. Hungerford, Douglas J. Shaw	Thomson Higher Education	2009

Course Outcomes:

After completion of the course, a student should be able to:

- Apply the knowledge of numbers, graph and functions in real life.
- Apply trigonometry in modelling real life problems.
- Use analytic trigonometry and inverse circular functions to solve variety of problems.
- Apply complex number theory to different domains, use vectors and matrices to solve real life problems.
- Identify different types of conics from equations, understand sequences and series and basics of limits and derivatives.

USDS1P5: Precalculus Tutorials

B.Sc (Data Science)	Semester – I
Course Name: Precalculus Tutorials	Course Code: USDS1P5
Periods per week (1 Period is 50 minutes)	3

Credits		2	
		Hours	Marks
EvaluationSystem	TutorialExamination	2½	50
	Internal	--	--

*10Tutorialsbased onthePrecalculus(USDS105)theoryshouldbeconducted.

SemesterII

USDS201:Probabilityand Distributions

B.Sc(DataScience)		Semester–II	
CourseName:ProbabilityandDistributions		CourseCode:USDS201	
Periodsperweek(1Period is50minutes)		5	
Credits		2	
		Hours	Marks
EvaluationSystem	TheoryExamination	2½	75
	Internal	--	25

CourseObjectives:

- Toexploreaboutrandomvariablesandimplement variousdistributionfunctions
- Tofamiliarizewithconceptsofprobabilityandlearnimplementationofdifferenttypesofprobabilities.

- Learn and implement the concept of expectation, related theorems and generating functions
- To know the concept and implementation of discrete distributions including Bernoulli, Binomial and power series distributions
- To get acquainted with the theory and practical implementation of concepts of continuous distributions

Unit	Details	Lectures
I	Theory of Probability: Introduction, history, different terms, mathematical tools, Axiomatic approach to probability, Mathematical notation, multiplication and conditional probability, Bayes theorem, Geometric probability.	12
II	Random Variables and Distribution Functions: Random Variable, distribution function, discrete random variable, continuous random variable, joint probability law, transformation of one-dimensional random variable, transformation of two-dimensional random variable	12
III	Mathematical Expectation and Generating Functions: Mathematical expectation, Expectation of a Function of a Random Variable, Addition Theorem of Expectation, Multiplication Theorem of Expectation, Expectation of a Linear Combination of Random Variables, Covariance, Variance of a Linear Combination of Random Variables, Moments of Bivariate Probability Distributions, Conditional Expectation and Conditional Variance, Moment Generating Function, Cumulants, Characteristic Function, Chebyshev's Inequality, Convergence in Probability, Weak Law of Large Numbers, Borel Cantelli Lemma, Probability Generating Function	12
IV	Theoretical Discrete Distributions: Introduction, Bernoulli Distribution, Binomial Distribution, Poisson Distribution, Negative Binomial Distribution, Geometric Distribution, Hypergeometric Distribution, Multinomial Distribution, Discrete Uniform Distribution, Power Series Distribution	12
V	Theoretical Continuous Distributions: Rectangular or Uniform Distribution, Normal Distribution, Gamma Distribution, Beta Distribution of First Kind, Beta Distribution of Second Kind, The Exponential Distribution, Laplace Double Exponential Distribution,	12
	Weibull Distribution, Cauchy Distribution, Central Limit Theorem, Compound Distributions, Pearson's Distributions, Variate Transformations, Order Statistics, Truncated Distributions	

Books and References:					
Sr.No.	Title	Author/s	Publisher	Edition	Year
1.	Fundamentals of Mathematical Statistics	S.C, Gupta and V. K. Kapoor	S.Chand and Sons	Tenth	2002
2.	Applied Statistics and Probability for Engineers	Douglas C. Montgomery and George C. Runger	Wiley	Sixth	2014

3.	Probability, Statistics, and Stochastic Processes	Peter Olofsson and Mikael Andersson	Wiley	Second	2012
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Course Outcomes:

After completion of the course, a student should be able to use spreadsheet/excel:

- Organize, manage and present data
- Analyse statistical data graphically using frequency distributions and cumulative frequency distributions
- Use the basic probability rules, including additive and multiplicative laws, using the terms, in dependent and mutually exclusive events.
- Translate real-world problems into probability models.
- Derive the probability density function of a transformation of random variables.
- Calculate probabilities and derive the marginal and conditional distribution of bivariate random variables.

USDS2P1: Probability and Distributions Practical

B.Sc(Data Science)		Semester–II	
Course Name: Probability and Distributions Practical		Course Code: USDS2P1	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- To provide students with the foundation of probabilistic and statistical analysis mostly used in varied applications in engineering and science
- To practically learn the theory concepts and apply in real time

List of Practical: (Can be done in MS-Excel or any Spreadsheet)	
1	Introduction to Probability:
a	Formulate and apply Bayes' Theorem Calculations for problems like The "Two-Supplier Example". [Hint: Use Prior Probabilities and Conditional Probabilities to compute Joint and Posterior Probabilities.]
b	Design spreadsheet to demonstrate the association Between Two Variables by Computing the Covariance and Correlation Coefficient. [Hint: Use COVAR and CORREL]
2	Discover Probability using formulas:
a	Design and spreadsheet experiment to compute the probability using the geometric distribution formula.
b	Create a spreadsheet application to compute the Conditional Probability. Also determine the probability that a randomly chosen event.
3	Random Variables and Distribution Functions:
a	Create spreadsheet application to Compute the Expected Value, Variance, and Standard Deviation

b	Create spreadsheet application to Compute Binomial Probabilities. [Hint Use BINOMDIST]
4	Probability Distribution and Law:
a	Create spreadsheet application to Poisson Probability Distribution. [Hint: Use POISSON]
b	Create spreadsheet application to implement joint probability law.
5	Mathematical Expectation and Chebychev's Theorem:
a	Create a spreadsheet application to compute the expectation of a Function of a Random Variable
b	Create spreadsheet application to apply Chebychev's Theorem.
6	Conditional Expectation and Generating Functions:
a	Create spreadsheet application to compute Conditional Expectation and Conditional Variance.
b	Create spreadsheet application to demonstrate the use of Generating Functions
7	Theoretical Discrete Distributions 1:
a	Create spreadsheet application to demonstrate Bernoulli Distribution.
b	Create spreadsheet application to use excel function for computing hypergeometric probabilities.
8	Theoretical Discrete Distributions 2:
a	Create spreadsheet application to Calculate Binomial Distribution in Excel. [Hint: Use BINOM.DIST]
b	Create suitable spreadsheet application to work with Power Series 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 spread application for computing probabilities for the exponential probability distribution. [Hint: Use EXPONDIST]
10	Theoretical Continuous Distributions 2:
a	Create spread application for demonstrating Weibull Distribution to obtain a model for data sets. [Hint: Use WEIBULL.DIST]
b	Create spread application for demonstrating Pearson's Distributions.

Course Outcomes:

After completion of the course, a student should be able to

- Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions.
- Define binomial outcomes and compute probability of getting X successes in N trials.
- Use the normal probability distribution including standard normal curve calculation so far prop

ri ate areas.

- Usedifferentdistributionsto solvesimplepracticalproblems.

USDS202:DatabaseManagement

B.Sc(DataScience)		Semester–II	
CourseName:DatabaseManagement		CourseCode:USDS202	
Periodsperweek(1Period is50minutes)		5	
Credits		2	
		Hours	Marks
EvaluationSystem	TheoryExamination	2½	75
	Internal	--	25

Course Objectives: This course concentrates the concept of the DBMS with respect to principles, design and implementation of DBMS. It aims to specify the functional and data requirements for a typical database application and to understand creation, manipulation and querying of data in databases.

- TounderstandOrganizing,structuringandstoringdata
- UnderstandDatabaseasRelationalmodel
- TounderstandSQLtoretrievedataandconceptof redundancy
- Tospecifythefunctionalanddata requirementsforatypicaldatabaseapplication
- Tounderstandcreation,manipulationandqueryingofdatain databases

Unit	Details	Lectures
I	Introduction & DBMS Architecture: Why Databases? Data versus Information, Introducing the Database, Role and Advantages of the DBMS, Types of Databases, Why Database Design Is Important, Evolution of File System Data Processing, Problems with File System Data Processing, Database Systems Data Models – Data Modeling and Data Models, The Importance of Data Models, Data Model Basic Building Blocks, Business Rules, The Evolution of Data Models, Degrees of Data Abstraction Entity Relationship Model: Entities, attributes, Relationships, Connectivity and Cardinality, Existence Dependence, Relationship Strength, Weak Entities, Relationship Participation, Relationship Degree, Recursive Relationships, Associative (Composite) Entities, Developing an ER Diagram, Database Design Challenges: Conflicting Goals.	12
II	Advanced Data Modeling: The Extended Entity Relationship Model, Entity Clustering, Entity Integrity: Selecting Primary Keys, Design Cases: Learning Flexible Database Design Normalization of Database Tables: Database Tables and Normalization, The Need for Normalization, The Normalization Process, Improving the Design, Surrogate Key Considerations, Higher-Level Normal Forms, Normalization and Database Design, Denormalization, Data-Modeling Checklist	12
III	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	12

IV	Advanced SQL: Data Definition Commands, Creating Table Structures, Altering Table Structures, Data Manipulation Commands, Virtual Tables: Creating a View, Sequences, Procedural SQL, Embedded SQL Database Design: The Information System, The Systems Development Life Cycle, The Database Life Cycle, Conceptual Design, DBMS Software Selection, Logical Design, Physical Design, Database Design Strategies, Centralized versus Decentralized Design	12
V	Transaction Management and Concurrency Control: What Is a Transaction? Concurrency Control with Locking Methods, Concurrency Control with Time Stamping Methods, Concurrency Control with Optimistic Methods, ANSI Levels of Transaction Isolation, Database Recovery Management Database Performance Tuning and Query Optimization: Database Performance- Tuning Concepts, Query Processing, Indexes and Query Optimization, Optimizer Choices, SQL Performance Tuning, Query Formulation, DBMS Performance Tuning, Query Optimization Examples Database Administration and Security: Data as a Corporate Asset, The Need for a Database and Its Role in an Organization, Introduction of a Database: Special Considerations, The Evolution of Database Administration, The Database Environment's Human Component, Security, Database Administration Tools, Developing a Data Administration Strategy, The DBA's Role in the Cloud, The DBA at Work: Using Oracle for Database Administration	12

Books and References:					
Sr.No.	Title	Author/s	Publisher	Edition	Year
1.	Fundamentals of Database Systems	Elmasri Ramez and Navathe Shamkant B,	Pearson Education	6th Edition,	2010.
2.	Database System Concepts	Silberschatz, Korth, Sudarshan,	McGraw Hill,	5 Edition,	2006.
3.	Database Management Systems,	Ramakrishnam, Gehrke,	McGraw-Hill,		2007
4.	Murach's MySQL	Joel Murach,	Murach,		2012

Course Outcomes:

After completion of the course, a student should be able to:

- Student should be able to evaluate business information problem and find the requirements of a problem in terms of data.
- Student should be able to draw database design in logical structure and can identify the entities which exist in a system
- Student should be able to construct normalized database and functional dependencies between attributes and relational algebra queries
- Student should be able to design the database schema with the use of appropriate data types for storage of data in database.
- Student should be able to create, manipulate, query and backup the databases with features

of SQL.

USDS2P2:DatabaseManagementPractical

B.Sc(DataScience)		Semester–II	
CourseName:DatabaseManagement Practical		CourseCode:USDS2P2	
Periodsperweek(1Period is50minutes)		3	
Credits		2	
		Hours	Marks
EvaluationSystem	PracticalExamination	2½	50
	Internal	--	--

Course Objectives: Provides the hands on the SQL language for retrieving the data from the database in different scenarios. The primary focus is to understand relational database concepts and design by using SQL.

- Identify entities and its relationship with relational model structure.
- To understand relational database using SQL and constraints implementation using create table query
- To Understand DML operations and backing of database
- To understand how to retrieve data from database and learn how to retrieve single value after performing calculations on group of values
- To understand built-in functions to perform operations on data
- To understand how to fetch data from two or more tables, which is joined to appear as a single set of data
- To understand nested and larger queries as advanced fetching of data
- To understand concept of virtual table.
- To understand how to control user access in database.

List of Practical: (Can be done in Oracle/SQL Server/MySQL)	
1.	Forgiveness scenario Draw E-R diagram and convert entities and relationships to table.
2.	Write SQL query for given problem statement:
a.	Viewing all databases
b.	Creating Database
c.	Viewing all Tables in a Database
3.	Perform the following Operations:
a.	Creating Tables (With and Without Constraints)
b.	Inserting/Updating/Deleting Records in a Table
c.	Saving (Commit) and Undoing (rollback)
4.	Perform the following Operations:
a.	Altering a Table
b.	Dropping/Truncating/Renaming Tables
c.	Backing up/Restoring a Database
5.	Perform following:
a.	Simple Queries with Where Operators
b.	Where with Keywords and Logical Operators

c.	SimpleQuerieswithAggregate functions
d.	QuerieswithAggregate functions(groupbyandhavingclause)
6.	PerformQueriesinvolving:
a.	DateFunctions
b.	StringFunctions
c.	MathFunctions
7.	RetrievingData fromMultipleTable:
a.	JoiningTables(InnerJoins,Outer-Joins)
b.	AliasesforTableNames
8.	Subqueries:
a.	WithINclause
b.	WithEXISTSclause
c.	HandlingNULL
9.	Views:
a.	CreatingViews
b.	DroppingViews
c.	Selectingfromview
10.	DCLstatements:
a.	Grantingandrevokingpermissions

Course Outcomes:

After completion of the course, a student should be able to:

- Students able to draw relationship diagram.
- Students able to perform various operations such as insert, update, delete and retrieve data from database using SQL queries.
- Students able to perform alteration in tables and can restore and take backup of the database.
- Students able to perform operations using simple SQL queries to fetch data and learn various aggregate functions to get single value.
- Students able to perform SQL queries using JOIN keyword for joining two or more tables.
- Students able to perform nested queries using in, exists operators.
- Students able to create new table by joining one or more tables and learn how to hide attribute from end user.
- Students able to restrict the user from accessing data in database.

USDS203: R Programming

B.Sc(Data Science)		Semester–II	
Course Name: R Programming		Course Code: USDS203	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- Master the use of the R interactive environment and expanding by installing R packages
- Read Structured Data into R from various sources
- Understand the different datatypes and data structures in R
- Manipulate strings, dates in R
- Understand basic regular expressions in R
- Understand base R graphics
- Focus on GGplot2 graphics for R and be familiar with trellis (lattice) graphics.

Unit	Details	Lectures
I	Getting started with R: R Software: Obtaining R and RStudio, First R Encounter, Getting started: R as a big calculator, Assignment, Basic operators, Help with functions and features, Quiz, A few important points on R Working with R R Interfaces- Using R and RStudio: R Software, Obtaining R and RStudio, The default R interface, RStudio Interface, 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 R Objects, Creating and accessing objects, Modifying elements, Quick recap, Exercise 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 – Readlines, Writing Data table from R, Exercise, Importing Data from other Software, Reading data from Excel into R, Import/Export from other statistical software, From a Database Connection, Sampling and Creating simulated data, Exercise	12
II	Introduction to programming and writing Functions in R: Why do we want to write functions?, Conditional statements (if, ifelse, switch), Repetitive execution: For and While loops, The Apply Functions, Exercise, Functions for parsing text, Programming in R: More advanced, Viewing Code of functions from R packages, Exercise - Parsing Real Data - World Population Data from Wikipedia, Writing functions: more technical discussion - Scoping, Options for Running memory or CPU intensive jobs in R, Efficient R coding Introduction to graphics in R: The R function plot(), Exercise, Customize plot with low-level plotting commands, Default parameters – par, Interacting with graphics, Saving plots, Useful Graphics Resources	12
III	Advanced Graphics: Advanced plotting using Trellis; ggplots2, Lattice, Examples that Present Panels of Scatterplots using xyplot(), Simple use of xyplot Importing Data- readr: Functions for Reading Data, File Headers, Column Types, String-based Column Type Specification, Function-based Column Type Specification Parsing Time and Dates, Space-separated Columns, Functions for Writing Data Representing Tables – tibble: Creating Tibbles, Indexing Tibbles	12

IV	Reformatting Tables – tidy: Tidy Data, Gather and Spread, Complex Column Encodings, Expanding, Crossing, and Completing, Missing Values, Nesting Data Pipelines – magrittr: The Problem with Pipelines, Pipeline Notation, Pipelines and Function Arguments, Function Composition, Other Pipe Operations Working with Strings – stringr: Counting String Patterns, Splitting Strings, Capitalizing Strings, Wrapping, Padding, and Trimming, Detecting Substrings, Extracting Substrings, Transforming Strings Working with Factors – forcats: Creating Factors, Concatenation, Projection, Adding Levels, Reorder Levels	12
V	Manipulating Data Frames – dplyr: Selecting Columns, Filter, Sorting, Modifying Data Frames, Grouping and Summarizing, Joining Tables, Income in Fictional Countries Working with Dates – lubridate: Time Points, Time Zones, Time Intervals	12

Books and References:					
Sr.No.	Title	Author/s	Publisher	Edi ⁿ	Year
1.	Introduction to Programming and Statistical Modelling in R	Aedin Culhane	HARVARD SCHOOL	1 st	2013
2.	R Data Science Quick Reference	Thomas Mailund	Apress	1 st	2019
3.	THE BOOK OF R	Tilman M. Davies	No Starch Press	1 st	2016
4.	Practical Data Science with R	NINA ZUMEL JOHN MOUNT	MANNING		2014
5.	Beginning Data Science in R	Thomas Mailund	Apress		2017

Course Outcomes:

After completion of the course, a student should be able to:

- To use R Studio and explore the features for R programming.
- To use R functions and graphics within R programming for solving problems.
- To work with advanced graphics of R, import and use the data and represent the data into tables.
- To apply formatting on table, use Pipelines in application and use strings, factors in R programming.
- To manipulate Data Frames and make use of Dates in R application.

USDS2P3: R Programming Practical

B.Sc(Data Science)		Semester–II	
Course Name: R Programming Practical		Course Code: USDS2P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50

	Internal	--	--
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Course Objectives:

- To learn implementing expressions in R
- To learn and implement control flow using loops
- To explore and use basic data structures in R

List of Practical:	
1.	Introduction to R Programming Elements
a.	Write an R program to implement expressions, assignment and decision making
b.	Write an R program to design and implement loops.
c.	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 function 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(), sprintf()]
4.	Performing Statistics with R-I
a.	Write an R program to apply built-in statistical functions. [Hint: mean, median, standard deviation and others]
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 Visualization and Analysis
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]
7.	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.
8.	Data Interfaces in R
a.	Write an R program to demonstrate data interface with CSV files [Hint: creating data for CSV, analyzing, writing CSV files]

b.	Write an R program to work with spreadsheet (Excel) programs. [Hint: installing, loading, verifying, creating data for xlsx file]
c.	Write an R program to manage data using XML files. [Develop data interface for maintaining Employee Information]
d.	Write an R program to demonstrate working with R MySQL Package
9. Handling Errors in R	
a.	Write an R program to demonstrate various error messages in R Programming
b.	Write an R program to implement Error Handling in R [Hint: warning(), stop(), try(), tryCatch(), Calling Handlers()]
10. Measuring Performance	
a.	Write R program to measure the performance with the help of built-in function like microbenchmark().

Course Outcomes:

After completion of the course, a student should be able to:

- Use expression for decision making, get knowledge of types of loops and loop control statements and able to create, access and manipulate essential data structures.
- Develop skill to manage multiple data through various options available in R.
- Use R object, simple statistical function for data analysis and Differentiate between linear and multiple regression analysis.
- Get the knowledge about various function for Normal and Binomial Distribution and able to implement and analyse data using different time intervals and multiple time series
- To create Tabulation for presentation of data and operation of them and get the knowledge about various ways of plotting data and saving them
- Get the knowledge of implementing class concept in R and able to define reference class, create objects, access and modify fields
- Get the knowledge about developing data interface for storing data in CSV files also knowledge about working with Excel files and able to interface with XML files and able to interface with MySQL, query and manipulate data in it.
- Get the insight into errors related to name errors, control structure error, connection error etc., and able to identify and handle errors in R code
- To analyze performance of the R code.

USDS204: Environmental Science

B.Sc(Data Science)		Semester–II	
Course Name: Environmental Science		Course Code: USDS204	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- To learn and sensitize learners to their environment
- To know about natural resources, ecology and ecosystem
- To learn insight of biodiversity, pollution and its impact
- Explore about Social Issues and the Environment
- To learn about Environment Management and sustainable development

Unit	Details	Lectures
I	Introduction to Environmental Studies Importance of Environmental Education, Environmental Literacy, Environmental Engineering, Environmentalism, Components of Environment and their Interactions, Man and the Biosphere, Impacts of Development on Environment Natural Resources Forest Resources, Dams, Water Resources, Food Resources Energy Resources, Land Resources	12
II	Ecology Ecosystem, Ecosystem-Anthroposystem Comparison, Biome and Ecosystem, Energy Flow through the Ecosystem, Ecological Succession, Food Chains and Webs, Ecological Pyramids, Biological Magnification or Biomagnification, Human versus Natural Food Chains, Biogeochemical Cycles, The Water Cycle (Hydrologic Cycle), Carbon Cycle, Oxygen Cycle, Nitrogen Cycle, Forest Ecosystems, Grassland Ecosystems, Aquatic Ecosystems Biodiversity Genetic Diversity, Species Diversity, Ecosystem Diversity, Value of Biodiversity, Value of Genes, Biopiracy, Biogeographical Classification of India, India as a Mega Diverse Nation, Endemic Species of India, Threats to Biodiversity, Hotspots of Biodiversity, Endangered Species, Conservation of Biodiversity, Genetic Engineering and Biodiversity	12
III	Environmental Pollution Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Solid Waste Management, Hazardous Waste Management, Pollution Prevention, Disaster Management Human Population and the Environment Population Growth, Human Rights, Value Education, HIV/AIDS, Environment and Human Health, Family Welfare Programmes, Women	12
	and Child Welfare, Role of Information Technology in Environment and Human Health	
IV	Social Issues and the Environment From Unsustainable to Sustainable Development, Urban Problems Related to Energy, Water Conservation, Watershed Management, Resettlement and Rehabilitation, Environmental Ethics, Acid Rain, Ozone Layer Depletion, Greenhouse Effect, Global Warming and Climate Change, Pollution Control Boards and Control Pollution Acts in India, Nuclear Hazards and Accidents, Environmental Impact Assessment, Risk Management, Precautionary Principle, Polluter-Pays Principle, The Beneficiary-Pays Principle, Role of Non-Government Organizations, ISO 14000 Series of Environmental Management Standards, Economy and Environment	12

V	Environmental Management Environmental Impact Assessment, Methodology, Waste as a Resource, Environmental Laws, Requirements of a Contract, Environmental Legislations, Powers and Functions of Pollution Control Boards, Case Studies, Environmental Management Plan, Environmental Audit, Policies for Quality Improvement, Problems, Policy Sustainable Development Ethics, Laws of Nature, Progress, Environmental Stress, Sustainability, Self-purification and Regeneration, Action Plan, Computerization and Information Technology	12
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Books and References:					
Sr.No.	Title	Author/s	Publisher	Edition	Year
1.	Environmental Studies	Benny Joseph	McGraw Hill	3 rd	2017
2.	Principles of Environmental Science and Engineering	P. Venugopala Rao	PHI Learning	6 th	2014
3.	Introduction to Environmental Engineering	Gilbert M Master	Pearson	3 rd	2015
4.	Environmental Ethics: A Very Short Introduction	Robin Attfield	Oxford	1 st	2019
5.	Fundamental Concept in Environmental Studies	D.D. Mishra	S. Chand	Revised Edition	2010

Course Outcomes:

After completion of the course, a student should be able to:

- Ability to recognise explain important environmental resources
- Knowledge about insights of ecology and biodiversity
- Recognise the cause and effect of environmental pollution and other social issues
- Knowledge about population and its impact on environment
- Insight into environment management and sustainable development.

USDS2P4: Case Studies on Environment

B.Sc(Data Science)		Semester–II	
Course Name: Case Studies on Environment		Course Code: USDS2P4	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Tutorial Examination	2½	50
	Internal	--	--

* 10 Case studies related to Environmental Science (USDS204) should be conducted.

USDS205: Calculus

B.Sc(Data Science)		Semester–II	
Course Name: Calculus		Course Code: USDS205	
Periods per week (1 Period is 50 minutes)		5	

Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Course Objectives:

- To give the insight of calculus starting with continuity and derivatives.
- To gain proficiency in integration.
- To apply derivatives and integration to various domains.
- To use polar coordinates for different conics and understand multiple integrals.
- To understand partial differentiation and differential equations.

Unit	Details	Lectures
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.	12
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.	12
III	Applications of differentiation: Maximum and Minimum Values, The Mean Value Theorem, Derivatives and Shape of a Graph, Indeterminate Forms and L'Hospital's Rule, Curve Sketching, Graphing with Calculus and Calculators, Optimization Problems, Newton's Method. Applications of Integration: Areas between Curves, Volumes, Volumes by Cylindrical Shells, Work, Average Value of a Function, Arc Length, Area of a Surface of Revolution, Applications to Physics and Engineering, Applications to Economics and Biology, Probability.	12
IV	Parametric Equations and Polar Coordinates: Curves Defined by Parametric Equations, Calculus with Parametric Curves, Polar Coordinates, Areas and Lengths in Polar Coordinates, Conic Sections, Conic Sections in Polar Coordinates. Multiple Integrals: Double Integrals over Rectangles, Iterated Integrals, Double Integrals over General Regions, Double Integrals in Polar Coordinates, Applications of Double Integrals, Triple Integrals,	12
	Triple Integrals in Cylindrical Coordinates, Triple Integrals in Spherical Coordinates, Change of Variables in Multiple Integrals	

V	Partial Derivatives: Functions of Several Variables, Limits and Continuity, Partial Derivatives, Tangent Planes and Linear Approximations, The Chain Rule, Maximum and Minimum Values, Lagrange Multipliers. Differential Equations: Modelling with Differential Equations, Direction Fields and Euler's Method, Separable Equations, Models for Population Growth, Linear Equations, Predator-Prey Systems.	12
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edi ⁿ	Year
1.	Calculus – Early Transcendentals	James Stewart	Thomson	6 th	2008
2.	Calculus and Analytical Geometry	George B. Thomas Jr., Ross L. Finney, Maurice D. Weir	Addison Wesley Publishing Company	--	1998
3.	Schaum's 3000 Solved Problems in Calculus	Elliot Mendelson	Tata McGraw Hill	--	1988
4.	The Advanced Calculus Problem Solver	Staff of Research & Education Association	Research & Education Association	---	2007
5.	Calculus Made Easy	Silvanus P. Thompson, Martin Gardner	PALGRAVE		1998

Course Outcomes:

After completion of the course, a student should be able to:

- Quickly and easily find the derivative of a function.
- Perform integration of functions with ease.
- Apply the knowledge of derivatives and integration to different domains and obtain the results.
- Apply the knowledge of multiple integrals and polar coordinates to solve real life problems with ease.
- Use partial derivatives and differential equations to solve variety of problems.

USDS2P5: Calculus Tutorials

B.Sc(Data Science)		Semester– II	
Course Name: Calculus Tutorials		Course Code: USDS2P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Tutorial Examination	2½	50
	Internal	--	--

* 10 tutorials based on Calculus (USDS205) should be conducted.

Evaluation Scheme

1. Internal Evaluation (25 Marks).

i. Test: 1 Class test of 20 marks. (Can be taken online)

Q	Attempt any four of the following:	20
a.		
b.		
c.		
d.		
e.		
f.		

ii. 5 marks: Active participation in the class, overall conduct, attendance.

2. External Examination: (75 marks)

	All questions are compulsory	
Q1	(Based on Unit 1) Attempt <i>any three</i> of the following:	15
a.		
b.		
c.		
d.		
e.		
f.		
Q2	(Based on Unit 2) Attempt <i>any three</i> of the following:	15
Q3	(Based on Unit 3) Attempt <i>any three</i> of the following:	15
Q4	(Based on Unit 4) Attempt <i>any three</i> of the following:	15
Q5	(Based on Unit 5) Attempt <u><i>any three</i></u> of the following:	15

3. Practical/Tutorial Exam: 50 marks

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

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

OR

1.	Practical Question	40
2.	Journal	5
3.	Viva Voce	5

For Tutorial Exam, a paper of 50 marks to be solved.

Bridge Course on Mathematics and Statistics

The students who have not opted for Mathematics during their class 12 will have to complete the bridge course for being eligible for the admission to First Year of B.Sc. Data Science.

The training should be for 30 hours, 2 hours session on each of the following topics followed by examination of 75 marks with 5 marks questions on each of the following topics.

1. Measurement of Angles
2. Trigonometric Functions
3. Trigonometric Functions of compound Angles

4. Factorization Formulae
5. Linear inequations
6. Determinants
7. Logarithms
8. Sequences
9. Permutations and Combinations
10. Mathematical Induction
11. Binomial Theorem
12. Differentiation
13. Integration
14. Statistics
15. Probabil

ity Question paper

Q I		Attempt <u>any three</u> of the following:	15
1.	Measurement of Angles		
2.	Measurement of Angles		
3.	Binomial Theorem		
4.	Trigonometric Functions		
5.	Differentiation		
6.	Integration		
7.	Trigonometric Functions of compound Angles		
8.	Trigonometric Functions of compound Angles		
Q II		Attempt <u>any three</u> of the following:	15
1.	Factorization Formulae		
2.	Linear inequations		
3.	Linear inequations		
4.	Probability		
5.	Determinants		
6.	Determinants		
Q III		Attempt <u>any three</u> of the following:	15
1.	Logarithms		
2.	Logarithms		
3.	Sequences		
4.	Sequences		
5.	Permutations and Combinations		
6.	Permutations and Combinations		
Q IV		Attempt <u>any three</u> of the following:	15
1.	Mathematical Induction		
2.	Mathematical Induction		
3.	Binomial Theorem		

Send by Dr. Balraj (R)

18.11.2020

B.Sc. Data Science under Computer Science

JUSHM Cotton

Atc No. 115

m.c item

No. 2

Atc 11/11/22

Item 6 (N)

1. Necessity of starting the course.

Data science can be defined as a blend of mathematics, business acumen, tools, algorithms and machine learning techniques, all of which help us in finding out the hidden insights or patterns from raw data which can be of major use in the formation of big business decisions.

In data science, one deals with both structured and unstructured data. The algorithms also involve predictive analytics in them. Thus, data science is all about the present and future. That is, finding out the trends based on historical data which can be useful for present decisions and finding patterns which can be modelled and can be used for predictions to see what things may look like in the future.

Data Science is an amalgamation of Statistics, Tools and Business knowledge. So, it becomes imperative for a Data Scientist to have good knowledge and understanding of these.

With the amount of data that is being generated and the evolution in the field of Analytics, Data Science has turned out to be a necessity for companies. To make most out of their data, companies from all domains, be it Finance, Marketing, Retail, IT or Bank. All are looking for Data Scientists. This has led to a huge demand for Data Scientists all over the globe. With the kind of salary that a company has to offer and IBM is declaring it as trending job of 21st century, it is a lucrative job for many. This field is such that anyone from any background can make a career as a Data Scientist.

2. Whether UGC has recommended to start the said course?

Yes, UGC in its recommendation and curriculum design mentions about the data science programme.

3. Whether all the courses have commenced from the academic year 2019-20?

The B.Sc. in Data Science course has commenced from the academic year 2020 - 21.

4. The courses started by University are self-financed, whether adequate number of permanent faculties are available?

The field being very new, there are faculties available in various colleges and as the Data Science is amalgamation of various fields, many of the permanent faculties are available for the course.

5. To give details regarding the duration of the course and is it possible to compress the course?

Present Duration: 3 years (Six semesters)

To give proper justice to the teaching learning, it is essential to have 3-year, 6-semester course. The contents cannot be compressed nor the duration can be reduced. Lot of practical exposure is needed and hence it cannot be compressed.

6. Intake capacity of the course and the number of admissions given in the current academic year 2020 - 21

The intake capacity per batch in any college is 60. The number of admissions given during the current academic year (2020 - 21) is _____.

7. Opportunities of Employability / Employment available after undertaking these courses.

The course has extensive hands-on practical training and various job roles and recruiters are as follows:

Business Analytics Professional

A business analytics professional has the skills to make use of the information from

Opportunities of employability / employment available after undertaking these courses.

The course has extensive hands-on practical training and various job roles and recruiters are as follows:

Business Analytics Professional

A business analytics professional has the skills to make use of the information from the data to generate insights about the business. To be a data focused business analytics professional, you must know the technical components related to managing and manipulating data.

Recruiters: Walmart, Conduent, Genpact etc.

Business Intelligence Professional

A Business Intelligence Professional analyse the past trends using Data Visualization tools like Tableau, Power BI etc to develop and implement business strategies. They also monitor all the performance metrics of the company and provide insight to the respective department.

Recruiters: Accenture, ZS Associates, Sun Pharma etc.

Data Scientist

Data Scientists help build complicated data models and simulations in a Big Data environment. Focusing more on math and statistics, these data scientists have a particular interest in reading statistics and building & deploying machine learning models.

Recruiters: HDFC Bank, Amdocs, Oyo etc.

Big Data Analysts

Job responsibilities of a Big Data Analyst include collaborating with data scientists and data architects to ensure streamlined implementation of services and executing big data processes.

Recruiters: Novartis, Allergan Tech, Amazon AWS etc.

HR Analytics Professionals

HR Analytics is the hottest trends in the Industry. HR Analytics professionals are working on how to reduce employee attrition rate, finding out the best recruitment channels and solving appalling problems related to HR Function.

Recruiters: Lenskart, Mearsk, Ericsson etc.

Marketing Analytics Professionals

Due to the abundance of data in all the marketing campaign, Analytics enable the marketing professionals to evaluate the success of their marketing initiatives. This is accomplished by measuring performance.

Recruiters: Microsoft, Deloitte, Reliance etc.



Course	Nature of cutting Issue	Sem & Modules	Pg. no
BAMMC	Overview of Indian Society:	SEM 1	73 - 74
BAMMC	Concept of Disparity - 1:	SEM 1	73 - 74
BAMMC	Concept of Disparity - 2:	SEM 1	73 - 74

UNIVERSITY OF MUMBAI



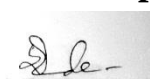
1	Title of the Course	BA in Multimedia and Mass Communication (BAMMC)
2	Eligibility for Admission	12 th pass.
3	Passing Marks	40%

4	Ordinances / Regulations (if any)	--
5	No. of Years / Semesters	03 years & 06 semesters
6	Level	P.G. / ☒ U.G./ Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester ☒ CBCS (Strike out which is not applicable)
8	Status	New / Revised ☒ CBCS (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year <u>2019-20</u> in Progressive manner.

Date

: Date : April 26, 2019.

Signature :



Name of BOS Chairperson[✓] / Dean : Dr. Sunder Rajdeep

CHOICE BASED CREDIT SYSTEM

**BA in Multimedia and Mass Communication (BAMMC) (Choice based)
Semester - I & II revised Syllabus to be sanctioned & implemented from 2019-20.**

PROGRAM OUTCOME

1. The program considers media industries and their relationship to culture and society, and the understanding of how communication works. The program emphasizes the development of critical thinking, professional writing skills and effective oral communication.
2. The Communication and Media Studies major prepares students for a wide variety of careers in business and industry, advertising, public relations and journalism, or advanced study
3. This program will equip the learners with professional skills essential for making career in Entertainment industry, Cinema, Television, OTT Platforms, social media platforms etc.
4. Students would demonstrate the ability to apply rhetorical principles in a variety of creative, cinematic, organizational, professional and journalistic venues.
5. Knowledge, skills, and values that prepare them for future careers in our interconnected society, whether in mass media or advanced study

6. Learners would develop a global awareness of political, social and corporate issues influenced by communication sensitivity and skills.
7. Learners will understand mass media as a system of interrelated forces, including historical foundations, technological advances, economic dynamics, regulatory constraints, and ethical concerns.
8. This programme will also give them an improved sense of self-confidence and self-efficacy and an awareness of their responsibilities as professionals in their field
9. Learners will be able to create and design emerging media products, including blogs, digital audio, digital video, social media, digital photography, and multimedia.
10. They will be better equipped to grasp the complex relationship between communication/media theories and a diverse set of individual, social, and professional practices.
11. Learners will understand the underlying philosophical assumptions of, and be able to apply, communication research methods to address a range of media texts and audiences, production and technological practices, and relevant social issues.
12. Learners will comprehend the foundations, process, and practices of writing for and about the media, and demonstrate proficiency in writing across platforms.
13. Learners will be able to conceptualize, design, and produce one or more works in media based on effective principles and practices of media aesthetics for a target audience.
14. Learners will acquire the knowledge and skills required to pursue a career in the specialization of their choice.

FY BAMMC- 40 CREDITS

Semester I				
Title	Credit	Paper	Name of the Course	
AECC	03	01	Effective Communication (EC -I)	
AEEC	02	02	Foundation Course	
DSC	04	03	Visual Communication	Language
DSC CORE I	08 (4×2)	04	Fundamentals of Mass Com	DSC- 1 A
DSC CORE II		05	Current Affairs	DSC-2 A
DSE	03	06	History of Media	
	20			

AECC: Ability Enhancement Compulsory Course | **AEEC:** Ability Enhancement Elective Course | **DSC:** Discipline Specific Core | **DSE:** Discipline Specific Elective

Semester I

Course code	Credits	Course Name
BAMMEC-101	03	Effective communication –I
BAMMFC-102	02	Foundation course –I
BAMMVC-103	04	Visual communication
BAMMFMC-104	04	Fundamentals of Mass Communication
BAMMCA-105	04	Current Affairs
BAMMHM-106	03	History of Media

01

PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	EFFECTIVE COMMUNICATION-I
COURSE CODE	BAMMEC-1-101
PAPER	1 (LANGUAGE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER I

COURSE CODE		COURSE NAME & DETAILED SYLLABUS	
BAMMEC-1-101		EFFECTIVE COMMUNICATION –I	
COURSE OUTCOME :			
1. To make the students aware of functional and operational use of language in media.			
2. To equip or enhance students with structural and analytical reading, writing and thinking skills.			
3. To introduce key concepts of communications.			
MODULE	TOPICS	DETAILS	LECTURES
1		Introduction to Communication	
	1.The concept of	Communication, its concepts, process Importance of Communication in Media; Differences between	

	communication	Technical and General Communication; Barriers to Communication; Measures to Overcome the Barriers to Communication.	
	2.Types of Communication	Types of Communication; Verbal Communication-Importance of verbal communication- Advantages of verbal communication- Advantages of written communication; Significance of Non-verbal Communication.	
	3.Oral communication and media	Anchoring, voice modulation, interview, public speaking, skits/ plays, panel discussions, voice over, elocution, debates and group discussion	
	4.Listening Skills	Listening Process; Classification of Listening; Purpose of Listening; Common Barriers to the Listening Process; Measures to Improve Listening; Listening as an Important Skill in Work Place.	
2	Reading -English, Hindi OR Marathi		
	1.Types of Reading	Types of reading -skimming and scanning Reading -examples Newspaper / Magazine article, TV, feature and documentary, radio bulletins, advertising copy, press release in English, Hindi OR Marathi. Recognizing aspects of language particularly in media. Importance of spelling	
	2.Various aspects of Language	Recognizing various aspects of language particularly related to media , Vocabulary 100 media words	
	3.Grammar & Usage	Grammatical structure – spelling, structure of sentences, Active / Passive voice, tenses, Idioms , Phrases, proper usage of homophones, homonyms etc. (<i>Kindly provide practice session- Test, Quiz etc</i>)	
3	Thinking and Presentation		
	1.Thinking	1. Types of thinking (rational ,logical, critical , lateral etc) Errors in thinking ,Partialism, Time scale ,Egocentricity 2. Prejudices ,Adversary Thinking	
	2 .Presentation	Presentation, its importance , Steps in Making a Presentation; Delivering a Presentation	
4	Translation		
	1.Introduction To Translation	Concept, importance, need for translation, challenges in translation, problems and importance of Information and Technology in translation. Interpretation: Meaning, Difference	

		between interpretation and translation	
	2.Interpretation	Interpretation: Meaning, Difference between interpretation and translation	
	3Role of a translator	Translator and his role in media, Qualities , Importance of Translator, Challenges faced by translator	
Total Lectures			48
BOS SYLLABUS COMMITTEE MEMBERS			
1. Gajendra Deoda (Convenor) 2. Smita Jain. 3. Shobha Venktesh.			
INTERNAL EVALUATION METHODOLOGY (any two to be selected - one individual and one group evaluation)			20 Marks
1. Project/Assignment 2. Debate & Group discussion 3. Presentation 4. Skit /Play in any 2 languages 5. Translation of any famous short story or folk or fable			
BIBLIOGRAPHY:			
1. Word Power Made Easy by Norman Lewis 2. Six Hats of thinking by Edward de Bono Communication Skills by Sanjay Kumar 3. Wren and martin for English Grammar			

02	
PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	FOUNDATION COURSE –I
COURSE CODE	BAMMFC-101
PAPER	2
TOTAL MARKS	100 (75 :25)
NO OF LECTURES	48

SEMESTER 1	
COURSE CODE	COURSE NAME & DETAILED SYLLABUS

BAMMFC-101		FOUNDATION COURSE –I	
COURSE OUTCOME :			
1. To introduce students to the overview of the Indian Society. 2. To help them understand the constitution of India. 3. To acquaint them with the socio-political problems of India.			
Note:	Revised FC (Foundation Course) Syllabus sanctioned vide Agenda Item No. 4.49 of AC. 6.6.2012 for the B.A. Sem-1 / B.Sc. Sem-1 of University of Mumbai. The BMM BoS has unanimously decided to follow the syllabus for BMM for Semester -I.		
MODULE	Topics	COURSE OUTCOME:	Lectures
Unit : 1 :	Overview of Indian Society:	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference.	05
Unit : 2 :	Concept of Disparity - 1:	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media; Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities.	10
Unit : 3 :	Concept of Disparity - 2 :	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences.	10
Unit : 4 :	The Indian Constitution :	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution.	10
Unit : 5 :	Significant Aspects of Political Processes :	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics.	10
Unit : 6 :	Growing Social Problems in India :	a. Substance abuse- impact on youth & challenges for the future b. HIV/AIDS- awareness, prevention, treatment and services c. Problems of the elderly- causes, implications and response	15

		d. Issue of child labour- magnitude, causes, effects and response e. Child abuse- effects and ways to prevent f. Trafficking of women- causes, effects and response. Note: 15 lectures will be allotted for project guidance Unit Number 6 will not be assessed for the Semester End Exam	
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03	
PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	VISUAL COMMUNICATION
COURSE CODE	BAMMVC 103
PAPER	3
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48

SEMESTER I	
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMVC 103	VISUAL COMMUNICATION

COURSE OUTCOME			
1. To provide students with tools that would help them visualize and communicate. 2. Understanding Visual communication as part of Mass Communication 3. To acquire basic knowledge to be able to carry out a project in the field of visual communication 4. To acquire basic knowledge in theories and languages of Visual Communication 5. The ability to understand and analyze visual communication from a critical perspective			
MODULE	TOPICS	DETAILS	LECTURES
	DEVELOPMENT OF VISUAL COMMUNICATION		

I	INTRODUCTION TO VISUAL COMMUNICATION	- History and development of Visuals - Need and importance of visual communication - Visual Communication as a process and as an expression, Language and visual communication - Visible concepts - Plans and organisational charts - Maps - Chronologies - Invisible Concepts - Generalisation Theories - Feelings or attitudes	10
	THEORIES OF VISUAL COMMUNICATION		
II	SENSUAL THEORIES	- Gestalt - Constructivism - Ecological	10
	PERCEPTUAL THEORIES	- Semiotics - Cognitive	
	IMPACT OF COLORS		
III	Colors and Design in Visual Communication	- Color theory - Psychological implications of color - Colors and visual pleasure - Elements of Design	08
	CHANNELS OF VISUAL COMMUNICATION		
IV	Tools/Mediums of Visual communication	- Painting & Photography - Film & Television, Documentaries, Script writing & visualization - Comics & Cartoons, Digital Images, Animation & VFX - News Papers, Advertisements, Photo Journalism - Folk & Performing Arts , Theatre	12
	LANGUAGE AND CULTURE IN THE AGE OF SOCIAL MEDIA		
V	Visual communication in the age of social media	- Ethics - Impact of Language and culture, Images and messages, Signs & Symbols (GIF, etc.) - Audience Behavior - Citizen Journalism, Going Viral - Visual stereotyping in social media	08
SYLLABUS DESIGNED BY			
- RANI D'SOUZA(CONVENOR) - RENU NAURIYAL - ARVIND PARULEKAR - BINCY KOSHY			
INTERNAL EVALUATION METHODOLOGY			

(any two to be selected- one individual and one group evaluation)	20 Marks
1. ORAL & PRACTICAL PRESENTATIONS 2. PROJECTS / ASSIGNMENTS 3. DEBATES /GROUP DISCUSSION 4. OPEN BOOK TESTS 5. QUIZ	
REFERENCE BOOKS	
1. HANDBOOK OF VISUAL COMMUNICATION EDITED BY KEN SMITH/SANDRA MORIARTY/GRETCHEN BARBATSIS & KEITH KENNY 2. VISUAL COMMUNICATION THEORY AND RESEARCH BY SHAHIRA FAHMY, MARY ANGELA BOCK & WAYNE WANTA 3. VISUAL COMMUNICATION BY RALPH E WILEMAN	

04	
PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	FUNDAMENTALS OF MASS COMMUNICATION
COURSE CODE	BAMMFMC 104
PAPER	4 (CORE-I)
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER I
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMFMC-104	FUNDAMENTALS OF MASS COMMUNICATION

COURSE OUTCOME :			
● To introduce students to the history, evolution and the development of Mass Communication in the world with special reference to India. ● To study the evolution of Mass Media as an important social institution. ● To understand the development of Mass Communication models. ● To develop a critical understanding of Mass Media. ● To understand the concept of New Media and Media Convergence and its implications.			
MODULE	TOPICS	DETAILS	LECTURES
I	Introduction and overview	1. Meaning and importance of Mass Communication 2. Forms of Communication: Intra Personal	12

		Communication, Interpersonal Communication, Group Communication, Mass Communication: Electronic, Satellite, Interactive, Digital 3. Communication etc. 4. Models of Communication: Gerber's Model, Sociological Model, Gatekeeping Model, Defleur's Model of the Taste-differentiated Audience Model, Hub Model, Sadharanikaran.	
II	History of Mass communication	1. From oral to communication (kirtan, Davandi, Powada, Nagara) 2. From Electric to Electronic communication, From electric to Digital communication, Contemporary scene in Indian communication landscape	12
III	Major forms of mass media	1. Traditional & Folk Media: 2. Print: Books, Newspapers, Magazines 3. Broadcast: Television, Radio 4. Films 5. Internet	12
IV	Impact of Mass Media on Society	A. I. Social Impact (With social reformers who have successfully used mass communication) II. Political Impact (With political leaders who have successfully used mass communication) III Economic Impact (With how economic changes were brought about by mass communication) IV. Developmental Impact (With how the government has successfully used mass communication) B. Impact of mass media on - 1 Education, 2. Children, 3. Women, 4. Culture, 5. Youth, 6. Development.	12
V	The New Media and media convergence	1. Elements and features of new media, Technologies used in new media, 2. Major challenges to new media Acquisition-personal, social and national, 3. Future prospects.	12
SYLLABUS DESIGNED BY			
1. NAVITA KULKARNI – CONVENER 2. SAURABH DESHPANDE- MEMBER 3. RASIKA SAWANT- MEMBER			
INTERNAL EVALUATION METHODOLOGY			
(any two to be selected- one individual and one group evaluation)			20 Marks

1. ORAL & PRACTICAL PRESENTATIONS
2. PROJECTS / ASSIGNMENTS
3. DEBATES /GROUP DISCUSSION
4. OPEN BOOK TESTS
5. QUIZ

REFERENCES:

1. Mass Communication Theory: Denis Mcquail
2. Mass Communication: Rowland Lorimer
3. The Media in Your Life: An Introduction to Mass Communication : Jean Folkerts and Stephen Lacy (Pearson Education)
4. Mass Communication Effects: Joseph Klapper
5. Mass Communication & Development: Dr. Baldev Raj Gupta
6. Mass Communication in India: Keval J Kumar
7. Mass Communication Journalism in India: D S Mehta
8. The Story of Mass Communication: Gurmeet Singh
9. Perspective Human Communication: Aubrey B Fisher.
10. Communication Technology & Development: IP Tiwari
11. The Process of Communication: David K Berlo
12. Cinema & Television: Jacques Hermabon& amp; Kumar Shahan.
13. Mass Media Today: Subir Ghosh
14. Mass Culture, Language & arts in India: Mahadev L Apte
15. Communication Facts & Ideas in Business: L. Brown (Prentice Hall).
16. India's Communication Revolution: ArvindSinghal and Everett Rogers.
17. The Myth of Mass Culture: Alan Swing wood
18. Communication: C.S. Rayadu,(Himalaya Publishing House, Mumbai).
19. Communication-concepts & Process: Joseph A Devito
20. Lectures on Mass Communication: S Ganesh.

05

PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	CURRENT AFFAIRS
COURSE CODE	BAMMCA 105
PAPER	5 (CORE-II)
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER I
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMCA 105	CURRENT AFFAIRS

COURSE OUTCOME

1. To provide learners with overview on current developments in various fields.
2. To generate interest among the learners about burning issues covered in the media
3. To equip them with basic understanding of politics, economics, environment and technology so that students can grasp the relevance of related news.
4. Twenty minutes of newspaper reading and discussion is mandatory in every lecture

Syllabus

Module	Details	Lectures
1	Current National stories	10
	1. Three political stories of national importance.	04
	2. Political leaders : news makers of the season (Brief profile of any three)	02
	3. One dominating economic /business news	02
	4. One dominating environment news stories	01
	5. One story of current importance from any other genre.	01
2	Polity and governance	08
	1 Ministries of Government of India Autonomous government bodies	01
	2. Ministry of Home Affairs Enforcement Organizations Internal Security Police	01
	3 Communal tensions Review of latest episodes of communal tensions	02
	4. The tensions in J&K Background, Political players Update on the current situation	02
	5. Review of any three Central Government projects and policies	02
3	International Affairs	10
	1 Security Council , Structure and role	01
	2. Issues that currently engage the SC	01
	3 Role of United Nations , General Assembly ,Other main organs of the UNO	2
	4. Issues that currently engage the UNO	2
	5. Four conflicts/issues of international importance	4
4	Maharashtra Issues	10
	1. Political parties reach and challenges, political leaders	02
	2. An update on the current political dynamics of Maharashtra	02
	3. News relating to the marginalized and displaced tribes	02
	4. The latest news on floods and drought,	02

		unemployment, health issues, etc	
	5.	Update two ongoing state projects	02
5	Technology		10
	1. Mobile Application for Journalists	Mobile apps help in content creation Examples of Mobile apps used by journalists worldwide	02
	2. Artificial Intelligence & Content Automation Tools	Introduction to AI and data science Introduction to Content Automation tools Examples of content automation tools in content creation	02
	3. Augmented Reality & Virtual Reality in Media	Introduction to Augmented Reality Introduction to Virtual Reality Examples of Augmented Reality games and apps Examples of Virtual Reality news websites worldwide	02
	4. Digital Gaming Industry	Introduction to Digital Gaming Industry	02
	5. Digital gaming in India	Overview of Indian digital gaming	02

Total Lectures	48
It is recommended that 15 minutes of every lecture is devoted to reading/discussing the major news stories of the day.	
Internal exercise:	20 Marks
The objective of internal exercise is to help the learners cultivate an interest in news and developments across fields.	

Sr no	Project/Assignment	Reason/Justification
01	Quiz on current affairs	This is an interesting way of engaging learners with news and personalities making news.
02	Group Discussion on burning issues	Bouncing of ideas and opinions is an effective way of enhancing understanding on a subject
03	Group presentations on any one current issue	This also gives the learners an opportunity to address the issues that come up in a team work and the ability to work through these. It also challenges their ability to collect relevant information and package effectively,

SYLLABUS DESIGNED BY
● Renu Nauriyal– CONVENER ● Shridhar Naik- MEMBER ● Rajat Bandopadhyay - MEMBER

Reference Books/Journals/Manuals

1. Manorma Yearbook published by Malayala Manorma
2. Competition Success Review
3. Competition Master
4. Yojana published by Publication Division, Ministry of Information and Broadcasting
5. The Virtual Reality Primer- Casey Casey Larijani
6. The Secret of Viral Content Creation- Priyanka Agarwal
7. <https://www.lucidpress.com/blog/top-30-social-media-automation-tools>
8. Understanding Augmented Reality: Concepts and Applications- Alan B Craig
9. <https://www.forbes.com/sites/suparnadutt/2018/03/09/how-online-gaming-in-india-is-growing-fast-into-a-billion-dolla>
10. 70 years in Indian politics and policy
<https://www.livemint.com/Politics/.../70-years-in-Indian-politics-and-policy.htr-market/#7e8eddbd55b6>

06

PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	HISTORY OF MEDIA
COURSE CODE	BAMMHM 106
PAPER	6 CORE III
TOTAL MARKS	100 (75 : 25)
NUMBER OF LECTURES	48

COURSE OUTCOME

1. Learner will be able to understand Media history through key events in the cultural history
2. To enable the learner to understand the major developments in media history.
3. To understand the history and role of professionals in shaping communications.
4. To understand the values that shaped and continues to influence Indian mass media.
5. Learner will develop the ability to think and analyze about media.
6. To sharpen the reading, writing, speaking and listening skills that will help the students to understand the development of Media

MODULE	TOPIC	DETAILS	LECTURE S
	INTRODUCTION		

I	EVOLUTION OF PRESS IN INDIA	a. Newspaper – the rise of the voice of India during British rule b. India's Freedom Struggle and Role of Media c. Independence and rise of Newspapers, d. Newspapers – a social aspect for freedom struggle, e. PRESS ACTS of India f. Press during the Emergency Period	10
LANGUAGE PRESS			
II	HISTORY OF INDIAN LANGUAGE PRESS IN INDIA	a. Rise of Hindi Language Newspapers (detailed report on vernacular press in India referring to newspapers) b. Regional Press and its popularity of Indian regional languages in various regions c. Vernacular Press Act 1876	10
DOCUMENTARIES & FILMS			
III	HISTORY OF DOCUMENTARIES AND FILMS	a. Genesis of documentaries and short films, (screening of few documentaries is essential- like <i>Hindustan Hamara, Zalzalaa, The Vanishing Tribe</i>) Role of Documentarians - P V Pathy, D G Tendulkar, H S Hirlekar, Paul Zils and Fali Billimoria Anand Patwardhan, b. Evolution of film making in India - brief history, Photography to moving films c. Origin of Hindi cinema d. Origin of Short films to what it is today, role of YouTube and WhatsApp e. Great masters of world cinema	10
BROADCASTING			
IV	HISTORY OF RADIO AND TELEVISION IN INDIA	a. Radio & Television as Mass Media b. Radio and Television Broadcasting c. The beginning of Radio and Television Shows • A New Era in Broadcasting in India • Satellite Television & Privatization in Broadcasting • Advertising in India d. Internet Protocol Television	10
MEDIA ICONS			
V	ROLE OF MEDIA ICONS IN THE HISTORY OF INDIAN MEDIA	1. Raja Rammohan Roy 2. Bal Gangadhar Tilak 3. M.K. Gandhi 4. B.R. Ambedkar 5. KP Kesava Menon 6. K.C. Mammen Mapillai 7. Maulana Abdul Kalam Azad	08
SYLLABUS DESIGNED BY			

1. PROF. RANI D'SOUZA (CONVENOR)
2. DR. YATINDRA INGLE
3. MR. MITHUN PILLAI

INTERNAL EVALUATION METHODOLOGY

(any two to be selected - one individual and one group evaluation)

20 Marks

1. PROJECTS/ ASSIGNMENTS
2. ORAL & PRACTICAL PRESENTATIONS
3. GROUP INTERACTIONS
4. DEBATES & DISCUSSIONS
5. QUIZ

(Screening of Short Films and Documentaries are to be done in the classroom with history being discussed)

REFERENCE BOOKS/JOURNALS/MANUALS

1. MASS COMMUNICATION IN INDIA PAPERBACK – BY KEVAL J. KUMAR
2. JOURNALISM IN INDIA: HISTORY, GROWTH, DEVELOPMENT BY K. C. SHARMA
3. MEDIA'S SHIFTING TERRAIN: FIVE YEARS THAT TRANSFORMED THE WAY INDIA COMMUNICATES BY PAMELA PHILIPSE
4. INDIAN NEWS MEDIA: FROM OBSERVER TO PARTICIPANT BY USHA M. RODRIGUES & MAYA RANGANATHAN
5. DOCUMENTARY FILMS AND INDIAN AWAKEN BY JAGMOHAN, PUBLICATIONS DIVISIONS MINISTRY OF BROADCASTING AND INFORMATION, GOVERNMENT OF INDIA
6. HISTORY OF INDIAN CINEMA PAPERBACK – 1 JAN 2012 BY RENU SARAN
7. HISTORY OF BROADCASTING IN INDIA BY DR. P. THANGAMANI
8. INDIA ON TELEVISION BY NALIN MEHTA (HARPER COLLINS PUBLISHERS)
9. PRESS IN INDIA: NEW HISTORY HARDCOVER – 1 AUG 1995 BY G.S.C. RAGUAVAN
10. COMMUNICATION IN HISTORY: STONE AGE SYMBOLS TO SOCIAL MEDIA BY DAVID CROWLEY (AUTHOR), PETER URQUHART (AUTHOR), PAUL HEYER (AUTHOR)

SEMESTER II

Semester II

Title	Credit	Paper	Name of the Course	
AECC	03	01	Effective Communication (EC –II)	
AEEC	02	02	Foundation Course	
DSC	04	03	Content Writing	Language
DSC CORE III	(4×2)= 08	04	Introduction to Advertising	DSC-1B
DSC CORE IV		05	Introduction to Journalism	DSC-2B
DSE	03	06	Media Gender & Culture	
	20			

Semester II		
Course code	Credits	Course Name
BAMMEC-201	03	Effective communication –II
BAMMFC-202	02	Foundation course –II
BAMMCW-203	04	Content Writing
BAMMID-204	04	Introduction to Advertising
BAMMIJ-205	04	Introduction to Journalism
BAMMMGC-206	03	Media, Gender & Culture

01

PROGRAM	BAMMC
YEAR	FYABMM
SEMESTER	II
COURSE:	EFFECTIVE COMMUNICATION -II
COURSE CODE	BAMMEC 201
PAPER	1
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMEC-201	Effective Communication Skills-II

Course Outcome: 1. To make the students aware of use of language in media and organization. 2. To equip or enhance students with structural and analytical reading, writing and thinking skills. 3. To introduce key concepts of communications.			Total Lectures: 48 hrs.
Module	Topics	Details	
1	Writing		
	1.Report writing	Report Writing (English, Hindi or Marathi) General report and News report writing - Basics and Format (Headline, Sub-headline, various type of report)	
	2. Organizational writing	Organizational writing : (English, Hindi or Marathi) Internal communication , E- mails -	

		Email E-mail Etiquette; Overcoming Problems in E-mail Communication, Stake holder communication Circulars- Guidelines for writing a circular- Languages and writing style of a circular- Format of a circular; Notices- Purpose- Format- Important points to remember while writing a notice, Letters of complaint, claim and adjustment, Consumer grievance letters, Letters under the Right to Information Act, Press Release, Letter to the Editor.	
	4. Writing for Publicity materials	Writing for Publicity materials (English, Hindi or Marathi) Headline, sub- headline, Body copy, Slogan, Jingle, Radio spot	
2	Editing		
	Editing	Editing: (English, Hindi and Marathi) Principles of editing (Punctuation, Substitution of words, Restructuring of sentences, Re-organizing sentence sequence in a paragraph, Use of link words,	
		Principles of Coherence and Cohesion), writing synopsis, abstracts, précis writing, news paper editing and magazine editing.	
3	Paraphrasing and Summarizing		
	1. Paraphrasing	Meaning , how to use paraphrase in communication, Paraphrase in plagiarism , Translation	
	2. Summarization	Summarizing content , the points and sub- points and the logical connection between the points	
4	Interpretation of technical data		
	Interpret technical data	Read graphs, maps, charts, Write content based on the data provided	
Total Lectures			48

Internal evaluation methodology **25**
Marks

Sr no	Project/Assignment
1	Clipping files on various current topics.
2	Publish letters to editors in news media.
3	Reporting of college events.

Bibliography:

- Business Communication - Rhoda A. Doctor and Aspi H. Doctor
- Communication Skills in English – Aspi Doctor
- Teaching Thinking - Edward De Bono De Bono's
- Thinking Course – Edward De Bono Serious Creativity –
- Edward De Bono The Mind Map Book – Buzan Tony

- Becoming a Translator: An Introduction to the Theory and Practice of Translation - by Douglas Robinson
- A Textbook of Translation - by Peter Newmark, Newmark

Syllabus Designed by:

- Gajendra Deoda (Convenor)
- Smita Jain
- Deepak Kumar Tiwari (Subject expert).

02

PROGRAM	BAMMAC
YEAR	FYBAMM
SEMESTER	II
COURSE:	FOUNDATION COURSE
COURSE CODE	BAMMFC 202
PAPER	2
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMFC-202	FOUNDATION COURSE

	Course Outcome 1. To introduce students to the overview of the Indian Society. 2. To help them understand the constitution of India. 3. To acquaint them with the socio-political problems of India.		
	Note : Revised FC (Foundation Course) Syllabus sanctioned vide Agenda Item No. 4.49 of AC. 6.6.2012 for the B.A. Sem-1 / B.Sc. Sem-1 of University of Mumbai. The BMM BoS is unanimously decided to follow the same syllabus to BA in Multimedia and Mass Communication (BAMMC) Semester -II as it is.		
Module	Topics	Details	Lectures
1	Globalisation and Indian Society	Understanding the concepts of liberalization, privatization and globalization; Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian	07

		sector due to globalization; rise in corporate farming and increase in farmers' suicides.	
2	Human Rights	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights; Human Rights constituents with special reference to Fundamental Rights stated in the Constitution.	10
3	Ecology	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life; Sustainable development- concept and components; poverty and environment.	10
4	Understanding Stress and Conflict	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict.	10
5	Managing Stress and Conflict in Contemporary Society	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation; Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society.	08
6	Contemporary Societal Challenges	a. Increasing urbanization, problems of housing, health and sanitation; b. Changing lifestyles and impact on culture in a globalised world. c. Farmers' suicides and agrarian distress. d. Debate regarding Genetically Modified Crops. e. Development projects and Human Rights violations. f. Increasing crime/suicides among youth.	15
	Note: 15 lectures will be allotted for project guidance Unit Number 6 will not be assessed for the Semester End Exam.		

03

PROGRAM	BAMMC
YEAR	FYBAMM
SEMESTER	II

COURSE:	CONTENT WRITING
COURSE CODE	BAMMCW 203
PAPER	3
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMCW-203	CONTENT WRITING

Crisp writing is the challenge.

Course Outcome:

1. To provide students with tools that would help them communicate effectively.
2. Understanding crisp writing as part of Mass Communication
3. The ability to draw the essence of situations and develop clarity of thought.

Syllabus			
Module	Topics	Details	Lectures
1	Foundation		8
	1.Grammar Refresher	With special emphasis on use of punctuations, prepositions, capital letters and lower case	02
	2.Vocabulary building	Meaning, usage of words , acronyms	02
	3.Common errors	Homophones and common errors in English usage.	02
	4. Essentials of good writing	With emphasis on writing with clarity, logic and structure	01
2	Editing Skills		10
	1. Redundant words	Identifying redundant words and phrases and eliminating these.	01
	2.Editing sentences	Editing redundant words/ phases and replacing wrong words/punctuation/grammatical error	02
	3.Editing captions	Editing redundant words/ phases and replacing wrong words/punctuation/grammatical error	02
	4.Editing headlines	Editing redundant words/ phases and replacing wrong words/punctuation/grammatical error	02
	5.Editing copy	Structuring a story, Creating a flow, editing redundant words/ phases and replacing wrong words/punctuation/grammatical error	03
3	Writing Tips and Techniques		10
	1.Writing tickers/ scrolls	For television news	01
	2.Writing social media	Twitter and for other social networks	01

	post		
	3.Writing briefs/snippets	News briefs, Lifestyle and entertainment snippets	03
	4.Caption writing	Picture stories etc	02
	5.Writing headlines	News headlines and feature headlines	03
4	PRESENTATION TOOLS AND TECHNIQUES		10
	1. Power Point Presentation	Use of Power Point tools Power Point to Pdf Power Point to self animated presentation Auto timing of Power Point presentation	02
	2. Info graphic	Colour selection Use of clip art Use of Power Point smart tools Minimalist animation for maximum impact	02
	3. Three minute presentation	Content for single slide Uses of phrases Effective word selection Effective presentation	02
	4. Google Advance search	How to select relevant information Locating authentic information How to gather information for domestic and international websites	02
	5. Plagiarism	How to do a plagiarism check Paraphrasing Citation and referencing style	02
5	Writing for the Web		10
	1. Content is King	Importance of content	01
	2. Less is more	Writing for print media/ social media like Twitter, etc	02
	3.Copy writing	Ad campaigns (creative, witty and attractive)	03
	4.Realtime content	Difference in writing for print vs digital	02
	5.Keywords	Designing keywords for Search Engine Optimization	02
Total Lectures			48

Internal exercise: **25**
Marks

The objective of internal exercise is to help the learner develop the skills of writing briefly and effectively.

Sr no	Project/Assignment	Reason/Justification
1	Writing Captions and Headlines	Simple writing is difficult. This assignment will help the learners to grasp the most essential aspect of a story and present these as headlines and captions
2	A three- minutes power point presentation	This assignment challenges the learners to draw the essence of elaborate reports, research papers and present in three minutes
3	Word Game/ Quiz	This is an exciting way to get learners engaged in

		vocabulary building
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Bibliography:

1. The Editor's Toolbox by Buck Ryan and Michael O' Donnell, Surjeet Publication
2. Writing for the Mass Media by James Glen Stovall
3. A Handbook of Rhetorical Devices by Robert A Harris

The Team:

1. Renu Nauriyal
2. Jitendra Nayak
3. Shreya Bhandary

04

PROGRAM	BAMMC
YEAR	FYBAMM
SEMESTER	II
COURSE:	INTRODUCTION TO ADVERTISING
COURSE CODE	BAMMID 204
PAPER	4
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMID-204	INTRODUCTION TO ADVERTISING

Learning Outcome:

Lectures: 48

1. To provide the students with basic understanding of advertising, growth, importance and types.
2. To understand an effective advertisement campaigns, tools, models etc.
3. To comprehend the role of advertising , various departments, careers and creativity
4. To provide students with various advertising trends, and future.

Syllabus

Module	Topics	Details	Lectures
1	Introduction to Advertising		18
	1. Introduction to advertising	Evolution, importance, Features , benefits , limitation , effects and 5M's of advertising	02
	2. Types of advertising	Consumer, Industrial, Retail, Classified, Corporate ,Public service, ,Generic, National, Global, International, Social (CSR) and Advocacy	02
	3. Ethics and Laws in Advertising	Puffery, Subliminal, Weasel claim, Surrogate, Shocking ads , Controversial , Comparative, Advertising code of ethics, Regulatory bodies, Laws and regulations	04
	4. Social, Cultural and Economic impact of Advertising	Women and advertising, Children and advertising, Senior citizen and advertising , Pop Culture and advertising	04
	5. Theories	Stimulus theory, AIDA, Hierarchy ,Means-End Theory	06
2	Integrated marketing communication and tools		10
	1. Integrated marketing communication	Emergence, Role, Tools, Communication process, The IMC Planning Process	02
	2. Print Media and Out-of Home Media	Basic concepts, Types of Newspapers advertising , advantages and disadvantage of News paper advertising ,Magazines, Factors to consider for magazine advertising, Out-of-home Advertising, On- premise advertising , Transit advertising , Posters , Directory advertising	02
	3. Broadcast Media	Radio advertising Advantages and Disadvantages of Radio advertising , Television advertising and its Advantages and Disadvantages, Film advertising and Product placement - Advantages and Disadvantages	02
	4. Public Relation	Meaning of Public Relations, Types of public relations Difference between public relations and advertising, Difference between Publicity and Advertising , Advantages and Disadvantages of Public Relations, Advantages and Disadvantages of Publicity	02
	5. Sales Promotion and Direct marketing	Growth and Types of Sales promotion, Advantages and Disadvantages Growth of Direct marketing and its tools Advantages and disadvantages	02
3	Creativity in advertising		14
	1. Introduction to Creativity	Importance of creative process, Creative strategy development Determining message theme, Big idea, positioning strategies, Types of appeals	06
	2. Role of different	Logo, Jingle, Company signature, Slogan, tagline, illustration , Creating Radio	06

	elements in ads	commercial – Words, sounds , clarity , coherence etc.	
	3. Elements of copy	Headline, Sub headline , Layout , Body copy , Types of copy and slogan , creating story board	02
4	Types of advertising agency, department, careers and latest trends in advertising		06
	1. Types of advertising agency	Full service, Creative boutique, Media buying agency, In- house agency, Specialized Agencies and others	02
	2. Various departments in an agency	Account handling, Production, Art, Copy, Media, Public relation, Human resources, Finance and others	02
	3. Latest trends	Rural advertising , Ambush advertising, Internet advertising , email advertising Advertainment, advertorial, mobile advertising	02
Total Lectures			48

Internal evaluation methodology	25
Marks	

Sr no	Project/Assignment
1	Individual/ group project should be given to develop an advertising strategy on any product or service
2	Write a story board/ types of copy.
3	Big Idea – Group project

Bibliography:

- 1) 1. Advertising Principles and Practices (7th Edition) William D. Wells, John Burnett, Sandra Moriarty
- 2) Adland: Global History of advertising by mark Tungate
- 3) Copy paste : How advertising recycle ideas by Joe La Pompe
- 4) Indian Advertising: Laughter & Tears by Arun Chaudhuri
- 5) Adkatha The Story Of Indian Advertising by [Halve Anand](#)
- 6) Pandeymonium by Piyush Pandey
- 7) Introduction to Advertising – Amita Shankar
- 8) Contemporary Advertising – Loudon & Britta
- 9) Advertising – Pearson Education
- 10) www.afaqs.com
- 11) www.exchange4media.com
- 12) www.adweek.com

Syllabus Designed by:

- Shobha Venkatesh (Convenor)
- Dr. Hanif Lakdawala (Subject expert)
- Kiran R. Dalani (Subject expert)

PROGRAM	BAMMC
YEAR	FYBAMM
SEMESTER	II
COURSE:	INTRODUCTION TO JOURNALISM
COURSE CODE	BAMMIJ 205
PAPER	5
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMIJ-205	INTRODUCTION TO JOURNALISM

Course outcome:

To help media students to acquaint themselves with an influential medium of journalism that holds the key to opinion formation & to create awareness.

Syllabus			
Module	Topics	Details	Lectures
1		History of Journalism in India	
		Changing face of journalism from Guttenberg to new media	
		Journalism in India:	
		Earliest publications The rise of nationalist press ,Post 1947 The emergency 1975 ,Post Emergency Post liberalization of the economy boom in magazines niche journalism	
		How technology advancement has helped media	
		New media with special reference to rise the Citizen Journalism	
2		News and its process	

		Definition of News ,	
		The news process from the event to the reader	
		What makes a good story	
		Anatomy of a news story	
		Types of Beats- Crime, Environmental, Entertainment, Educational, Agricultural, Sports etc	
3		Principles and format	
		What makes a great journalist: Objectivity, Accuracy, Without fear or favour Balance Proximity Difference between a PR and a journalist Criteria for news worthiness Hard News / Soft News and blend of the two News Reports, Features Editorials	
4		Careers in journalism	
		Reporter, Feature Writer, Mojo, Data journalist, Real time journalist, investigative journalist, rural journalist, In-depth journalist , lifestyle journalist	
5		Covering an event (flip class)	
		Background research	
		Finding a news angle	
		Capturing the right pictures for a photo feature Writing Headline, captions and lead	

Suggested readings

1. Writing and Reporting News by Carole Rich; Thomson Wadsworth
2. Journalism: Principles and Practice by Tony Harcup, Sage Publication, 2011 edition
3. Recommended reading Nalin Mehta on Indian TV
4. M V Kamath: 'Behind the by-line' journalist's Handbook, Professional Journalism.
5. Introduction to Journalism: Essential Technique Richard Rudin
6. Introduction to Journalism: Carole Fleming
7. Introduction to Journalism: James Glen Stowal

Syllabus Designed by:

1. Dr. Navita Kulkarni – Convener
2. Renu Nauriyal
3. Gajendra Deoda

PROGRAM	BAMMC
YEAR	FYBAMM
SEMESTER	II
COURSE:	MEDIA GENDER & CULTURE
COURSE CODE	BAMMMGC 206
PAPER	6
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMMGC-206	MEDIA GENDER & CULTURE

COURSE OUTCOME			
• To discuss the significance of culture and the media industry. • To understand the association between the media, gender and culture in the society. • To stress on the changing perspectives of media, gender and culture in the globalised era			
MODULE	TOPICS	TOPICS	LECTURES
		INTRODUCTION TO CULTURAL STUDIES	
I	EVOLUTION, NEED, CONCEPTS AND THEORIES	Evolution, features of cultural studies, Need and significance of cultural studies and media Concepts related to culture- Acculturation, enculturation, ethnocentrism, cultural relativism, cultural shock and its relevance in media Theories: • Stuart Hall : encoding and decoding, Circuit of culture • John Fiske: culture and industry • Feminism and Post feminism • Techno culture and risk – Ulrich Beck	(12)

		CULTURE AND MEDIA	
II	CONSTRUCTION, COMMODIFICATION, IMPACT AND RECENT TRENDS	1. Construction of culture- social, economic, political, religion and technology 2. Culture, industry and media- commodification, memes, representation, articulation, popular culture, power, cyber culture 3. Media and its impact on the cultural aspect of the society. 4. Culture industry and communication - with reference, to film, TV, social media, advertisements etc., 5. Recent trends in Culture consumption: Changing values, Ideologies & its Relevance in the Contemporary society.	(12)
		GENDER AND MEDIA CULTURE	
III	ROLE AND INFLUENCE OF MEDIA	1. The influence of media on views of gender (theme, under representation, stereotypes, women and men, stereotype images, roles etc.) 2. Role of media in social construction of gender, Changing attitudes & behaviour for empowerment of women : Movements of change 3. Gender equality and media 4. Hegemonic masculinity in media 5. Gender issues in news media (TV, radio, newspapers & online news)	(12)
		GLOBALISATION AND MEDIA CULTURE	
IV	GLOBAL, LOCAL, CONSUMER AND THE RECENT TRENDS	1. Media imperialism 2. Globalisation and Local culture- Issues and Perspectives, threat to regional and local identities, Impact of global culture and its relevance in media and gender 3. Consumer culture and media in the era of globalisation. 4. Digital Media culture: Recent trends and challenges 5. Media and Globalisation: Global economic flows, global cultural flows, homogenization & fragmentation, glocalization, creolization, globalization & power.	(12)
SYLLABUS DESIGNED BY:-			
1. PADMAJA ARVIND(CONVENOR) 2. RANI D'SOUZA 3. RUMINA RAI			
INTERNAL EVALUATION METHODOLOGY			

1. CONTINUOUS ASSIGNMENTS
2. ORAL & PRACTICAL PRESENTATIONS
3. GROUP/INDIVIDUAL PROJECTS
4. CLASS TEST
5. OPEN BOOK TEST
6. GROUP INTERACTIONS
7. QUIZ

REFERENCE

1. MEDIA AND CULTURAL STUDIES: MEENAKSHI GIGI DURHAM AND DOUGLAS

M.KELLNER

2. CULTURAL STUDIES- THEORY AND PRACTICE - CHRIS BARKER

3. AN INTRODUCTION TO CULTURAL STUDIES - PROMOD K. NAYAR

4. CULTURE CHANGE IN INDIA- IDENTITY AND GLOBALISATION - YOGENDRASINGH

5. INDIAN MEDIA IN A GLOBALISED WORLD - MAYA RANGANATHAN USHA

ROD GRIGUES

6. MEDIA GENDER AND POPULAR CULTURE IN INDIA- TRACKING CHANGE AND

CONTINUITY - SANJUKTHE - DASGUPTA

Course Code	Subject	Per Week L	P	Per Semester L	P	Th	Pr	L	P	Total
	ENHANCEMENT COURSE									
USCA501	Event Planning & Management	4	-	60	-	100	-	2	2	2
USCA502	Advanced Culinary Arts- Indian	4	-	60	-	100	-	2	2	2
USCA503	Advanced Food Production (Th) Q	3	-	45	-	100	-	2	-	2
USCA504	Advanced Pastry Arts	4	-	60	-	100	-	2	2	2
USCA505	Food Legislation (Th) Q	3	-	45	-	100	-	2	-	2
USCA506	Food Styling & Presentation	4	-	60	-	100	-	2	2	2
USCA507	Personality Development and Executive Soft Skills	4	-	60	-	100	-	2	2	2
	DISCIPLINE SPECIFIC ELECTIVE									
USCA508	Indian Culture & Traditions T	3	-	45	-	100	-	2	-	2
USCA509	Strategic Management TQ	3	-	45	-	100	-	2	-	2
USCA510	Hotel Engineering and Maintenance Management T	3	-	45	-	100	-	2	-	2
USCA511	Security and safety in catering establishment TQ	3	-	45	-	100	-	2	-	2
	GENERIC ELECTIVE									
USCA512	Organizational Development & Behavior T	3	-	45	-	100	-	2	-	2
USCA513	Hospitality Services Marketing TQ	3	-	45	-	100	-	2	-	2
	TOTAL	15	20	225	300	500	500	10	10	20

L one lecture / period of 60 minutes (1 hr.) P Practical

SEMESTER VI- Bachelor of Arts (Culinary Arts)

SEMESTER VI- Bachelor of Arts (Culinary Arts)										
Course Code	Subject	Class room instruction- face to face				Total Marks		Credits		
		Per Week		Per Semester						
		L	P	L	P	Th	Pr	L	P	Total
	SKILL ENHANCEMENT COURSE									
USCA601	Advanced Culinary Arts – Indian	-	4	-	60	-	100	-	2	2
USCA602	Advanced Culinary Arts – International	-	4	-	60	-	100	-	2	2
USCA603	Chocolatier	-	4	-	60	-	100	-	2	2
USCA604	Project Research (Culinary Based)	-	4	-	60	-	100	-	2	2
USCA605	Experimental and Innovative Cuisine	-	4	-	60	-	100	-	2	2
USCA606	Advanced Culinary Arts TQ	3	-	45	-	100	-	2	-	2
USCA607	Food Tourism TQ	3	-	45	-	100	-	2	-	2
	DISCIPLINE SPECIFIC ELECTIVE									
USCA608	Indian Snacks T	3	-	45	-	100	-	2	-	2
USCA609	Indian Confectionary T	3	-	45	-	100	-	2	-	2
USCA610	Kitchen Facilities planning and environment consciousness T	3	-	45	-	100	-	2	-	2
USCA 611	Entrepreneurship and Restaurant Startup TQ	3	-	45	-	100	-	2	-	2
	Generic Elective									
USCA612✓	Eco friendly practices in culinary operation TQ	3	-	45	-	100	-	2	-	2
USCA613✓	Introduction to maritime hospitality T	3	-	45	-	100	-	2	-	2
	TOTAL	15	20	225	300	500	500	10	10	20

L one lecture / period of 60 minutes (1 hr.) **P** Practical

USCA 507 PERSONALITY DEVELOPMENT AND EXECUTIVE SOFT SKILLS

Objectives: - On successful completion of this course students will be able to interact and communicate with his superiors, colleagues and his clients successfully.

Units	Particulars	Hours 60
	1 Definition & Importance of Social Image 1.2 Improving Self esteem 1.3 Grooming Basics 1.4 Social Graces and Proper E-mail and Telephone Etiquette 1.5 Basic National and International Social Etiquettes (do's and don'ts) 1.6 Self -Introduction	
	2 Revision of Grammar 2.1 Presentation I – Current issues 2.3 Group Discussion. 2.4 Personal Interviews 2.5 Voice Modulation 2.6 Public Speaking	
	3 Presentation –II (Groups & Individual) 3.2 Structuring the Presentation. 3.3 Visual aids to enhance effective Presentation. 3.4 Active Listening, body language, posture and eye contact. 3.5 Academic writing (Report writing, Agenda writing & Business letters) 3.6 Role play (conducting a meeting/ conference)	

USCA 508 INDIAN CULTURE AND TRADITION

Objectives :- On successful completion of this course students will be able to coordinate the importance of food and festival.

Unit	Particulars	Hours 45
Unit I	1 Festivals celebrated in India and festival Cuisine 1.1 Navroze (parsi) ✓ 1.2 Baisakhi 1.3 Padwa ✓ 1.4 Navratri ✓ 1.5 Onam ✓ 1.6 Pongal ✓ 1.7 Bakri-Id ✓ 1.8 Holi ✓ 1.9 Diwali 1.10 Easter ✓ 1.11 Christmas	15 hrs

USCA 612 ECO FRIENDLY PRACTICES IN CULINARY OPERATION

Objective:

Objective Of this course is to teach students about the varieties of Indian desserts

Learning Outcome

After completion of this unit student will be able to:

List the features of Indian confectionary

To define the features of Indian confectionary, its history and modern development region wise and will be able to state the preparation methods, Meal structure and regional variation.

Units	Sub Units	Topics	Total 45 Hrs
Unit I	1.1	Introduction to eco-friendly practices in culinary operation.	15 hrs
	1.2	Importance of eco-friendly practices in culinary operation.	
	1.3	Guidelines for approval of eco-friendly hotels.	
	1.4	Energy conversation program in hotel industry	
	1.5	Water conversation program in hotel industry	
Unit II	2.1	Introduction to eco-friendly kitchen designing	15 hrs
	2.2	On the Basis of physical layouts	
	2.3	Types of kitchen	
	2.4	Environment conditions	
	2.5	Green technology used in food production	
Unit III	3.1	Eco friendly practices used in food service outlets	15 hrs
	3.2	Introduction to designing of eco-friendly restaurant	
	3.3	Types of restaurant and their themes	
	3.4	Designing and planning of eco-friendly restaurants.	
	3.5	Designing eco-friendly bar.	

Semester V - B. Sc. (Hospitality Studies)

Course Code	Course	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO501	Food Production & Patisserie	3	4	-	45	60	-	45	60	-	105	100	100	2	2	-	4
USHO502	Food & Beverage Operations Management	3	4	-	45	60	-	45	60	-	105	100	100	2	2	-	4
USHO503	Front Office (16)	3	-	-	45	-	-	45	-	-	45	100		2	-	-	2
USHO504	Housekeeping	3	-	-	45	-	-	45	-	-	45	100		2	-	-	2
USHO505	Rooms Division Management(Practical)(pg 24)	-	4	-	-	60	-	-	60	-	60		100	-	2	-	2
USHO506	Corporate English	3	3	-	45	45	-	45	45	-	90	100	100	2	2	-	4

USHO507	Environmental & Sustainable Tourism	3	-	-	45	-	-	45	-	-	45	100		2	-	-	2
	Total	18	15	-	270	225	-	270	225	-	495	600	400	12	8	-	20
L one lecture / period of 60 minutes (1 hr.) P Practical T Tutorial																	

FOOD PRODUCTION & PATISSERIE (Theory)

Name of the Programme	Duration	Semester	Course/ Course Code
B.Sc. in Hospitality Studies	Six Semesters	V	Food Production & Patisserie- (USHO 501)
Course Code	Title	Credits	
USHO501	Food Production & Patisserie	2+2	

Course Code	Subject	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 501	Food Production & Patisserie	03	04	-	45	60	-	45	60	-	105	100	100	02	02	-	04

OBJECTIVES:

- To educate students on basic to advance culinary skills.
- To give an overview of culinary specialties across the globe.
- To educate students on latest food trends.
- To highlight the importance of food safety.
- To train students for better employment prospects.

For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3	4					
Credit	2	2					

Contents of syllabus for USHO501

Unit No.	Chapter No.	TOPIC	Hours	Marks
01	1	Basic of Food Production 1.1 Classical Kitchen Brigade 1.2 Cuts of Vegetable 1.3 Cuts of Meat, Fish, Poultry 1.4 Basic Methods of Cooking 1.5 Stocks 1.6 Sauces 1.7 Soups 1.8 Salads	15	15
	2	Basics of Bakery & Confectionery 2.1 Breads 2.2 Cakes 2.3 Cookies 2.4 Pastries		
	3	Modern Cooking Techniques & Processes 3.1 Sous Vide Cooking, Cook Chill & Cook Freeze 3.2 HACCP (Definition, Process in brief, Application in the Kitchen) 3.3 FSSAI Law		
	4	Larder 4.1 Definition; layout of the department 4.2 Hierarchy, Duties & responsibilities of larder chef 4.3 Tools & Equipment of larder department 4.4 Importance of larder control 4.5 Yield testing		

Unit No.	Chapter No.	TOPIC	Hours	Marks
02	5	Charcuterie 5.1 Introduction to Charcuterie 5.2 Brines – Cures – Marinades - Smoking 5.2.1 Types, uses, differences 5.3 Forcemeats 5.3.1 Components of forcemeat 5.3.2 Methods of making forcemeat 5.4 Sausages 5.4.1 Components of sausage 5.4.2 Types of sausages 5.4.3 International sausages with country of origin	15	15

		5.5 Charcuterie Products 5.5.1 Galantine, Ballotine, Pates, Terrines 5.5.2 Mousse & Mousseline 5.5.3 Gelée, Aspic Jelly & Chaud Froid 5.6 Ham – Bacon – Gammon 5.6.1 Definitions 5.6.2 Types of Bacon 5.6.3 International Ham/Bacon with country of origin 5.6.4 Difference between Ham/Bacon/Gammon		
	6	Cheese 6.1 Definition & History 6.2 Manufacturing Process 6.3 Types & Uses 6.4 International Cheese with Country of origin 6.5 Cheese Board (Layout & Presentation)		

Unit No.	Chapter No.	TOPIC	Hours	Marks
03	7	International cuisine. 7.1 Geographic Location 7.2 Historical Background 7.3 Staple Food & Specialties With Recipes 7.4 Tourist Destination 7.5 Sports 7.6 Festivals 7.7 Regional Attire 7.8 Currency 7.9 Equipments & Raw Ingredients 7.10 Glossary Terms 7.11 Audio Visual Clips Assignment to be prepared any one from the following countries: • Europe Continent ○ France ○ Italy ○ Spain & Portugal ○ Germany ○ Great Britain ○ Scandinavian countries ○ Greece • Middle East ○ Morocco ○ Lebanon ○ Turkey • Far East ○ China	15	15

		○ Japan ○ Thailand • North Central America ○ USA ○ Mexico		
	8	Chocolate 8.1 History and sources 8.2 Manufacturing and processing of chocolate 8.3 Types of chocolates 8.4 Tempering of chocolate 8.5 Application of cocoa, butter and white chocolate		
	9	Icings 9.1 Definition & Introduction 9.2 Varieties of Icing 9.3 Uses of Icing		

• **List of Culinary Terms –**

1. Aloyou	18. Eeste	35. Noisette
2. Arêtes	19. En crouste	36. Noix
3. Ballotine	20. Escargot	37. Rauget
4. Borde de lard	21. Escrocote	38. Rifroidir
5. Clou de girofle	22. Farine	39. Rognons
6. Cochon de loit	23. Fouetter	40. Roulade
7. Cornichon	24. Frappe	41. Rouler
8. Cotelette	25. Gelinette	42. Salpicon
9. Couronne	26. Gingembre	43. Saumure
10. Creamux	27. Godiveau	44. Suif
11. Crepine	28. Jombon	45. Tasse
12. Croquant	29. Laitance	46. Thon
13. Demi – devil	30. Medallion	47. Timbale
14. Denerver	31. Melange	48. Trencher
15. Depouiller	32. Merine	49. Viande
16. Eaut – gout	33. Navarin	50. Vide
17. Eberber	34. Nettoyer	

FOOD PRODUCTION & PATISSERIE (Practical)

Unit	Practical	Hours
1	1. France 2. Italy 3. Middle east 4. China 5. Breads (soft rolls/hard rolls/bread loaf)	20
2	6. USA 7. Great Britain 8. Spain / Portugal 9. Mexico 10. Pastries (Short Crust/Laminated/Choux)	20
3	11. Germany 12. Thailand (South East) 13. Greece 14. International Classical Cakes (Black Forest/ Sacher Torte/ Dobos /Pavlova) 15. Mystery Basket	20

- Each Menu will consist of dishes which comprises starter/soup/salad, main course with two accompaniments and a dessert.
- Examination Menu [Choice of 5 Menus – 5 Dishes which comprises of starter/soup/salad, main course with two accompaniments and a dessert. (1 Bakery Product compulsory)]

Scheme of Examination (Theory)

(a) Internal assessment- 40 marks

Sr.	Evaluation type	Marks
1	ONE class test/ case study / online examination to be conducted in the given semester	20
2	ONE assignment based on curriculum to be assessed by the teacher concerned	10
3	Active participation in routine class instructional deliveries	05
4	Overall conduct as a responsible learner, communication and Leadership qualities in organizing related academic activities	05
	Total	40

(b) Semester end examination (Pattern of Question Paper):- 60 Marks Theory

(Duration 2 hrs.)		
Questions in Examination Paper	Units	Maximum Marks
Q – 1	1	15
Q – 2	2	15
Q – 3	3	15
Q – 4	1,2,3	15
Total		60

- Question 1, 2 & 3 should be from topics mentioned in the table total 3 sub questions to be attempted of 5 marks each out of the choice of 4 sub questions.
- Question no. 4 should be of short answer type questions having six sub questions (2 from each unit) of 3 marks each. Total 5 questions are to be attempted.

Conduct of Practical Examination

Sr.	Particulars for External Practical Examination	Marks
1	Semester End Practical Examination	90
2	Journal	05
3	Viva	05
	Total	100

REFERENCE BOOKS

1. Hamlyn, Paul, (1984), *Larousse Gastronomique*, Hamlyn, London
2. Stevenson, Daniel, (1991), *Basic Cookery The Process Approach*, Stanley Thornes (Publishers Ltd., England
3. Kinsella John, & Harvey David, (1996), *Professional Charcuterie*, John Wiley & sons, Canada
4. Leto M.J.& Bode W.K.H., (2007), *The Larder Chef Food Preparation & Presentation*, Butterworth - Hinemann, UK
5. Campbell John , Foskett David, (2012), *Practical Cookery for level 2 NVQ & Apprenticeships*, Hodder Education, UK
6. Bali Parvinder S., (2012), *International Cuisine & Food Production Management*, Oxford University, New Delhi
7. Bali Parvinder S., (2011), *Quantity Food Production Operation*, Oxford University Press, New Delhi
8. Harbutt Juliet, (2009), *The World Encyclopedia of Cheese*, Hermes House , London
9. Ramesh P & Jos Wellman, (2009), *Professional Cookery -Theory & Practice*, Better Yourself Book, Mumbai
10. Basan Ghillie & Jan Terry, (2008), *A Practical Cook's Encyclopedia of Malaysia & Singapore*, Hermes House , London
11. Sheasby Anne, (2008), *New Soup Bible*, Hermes House , London
12. Chan Wynnie, (2004), *Fresh Chinese*, Hamlyn, Great Britain
13. Amiard Herve & Mouton Laurence, (2004), *A Taste of Morocco*, Hachette, France
14. Trutter Marion, (2009), *Culinaria Spain*, Konemann Publisher, Spain
15. Schlotter Katrin & Schmid Gregor, (2010), *Culinaria China; Cuisine, Country, Culture*, Hfullmann, China
16. Beazley Mitchell , (2007), *Cook Espana, Drink Espana - A Culinary Journey Around the food & Drink of Spain*, Mitchell Beazley, Great Britain
17. Foskett David & Cesrani Victor, (2007), *The Theory of Catering (with DVD)*, Book Power with Hodder, UK
18. Garlough robert & Campbell Angus, (2008), *Modern Garde Manger*, Thomson Delmer, Australia
19. France Christine, (2008), *Sauces*, Hermes House , London
20. Tubby Linda, (2008), *The Barbecue Bible*, Hermes House , London
21. Ingram Christine, (2008), *Appetizer, Starter Horsdoeures*, Hermes House , London
22. Ramesh P & Jos Wellman, 2009, *Professional Cookery -Theory & Practice*, Better Yourself Book, Mumbai
23. Gisslen Wayne, (2001), *Professional Cooking*, John Wiley & sons, New York
24. Larousssem, David, (1996), *Professional Garde Manger*, John wiley & sons, New Delhi

FOOD & BEVERAGE OPERATIONS MANAGEMENT (Theory)

Name of the Programme		Duration		Semester	Course/ Course Code		
B.Sc. in Hospitality Studies		Six Semester		V	Food & Beverage Operations Management (USHO 502)		
Course Code		Title		Credits			
USHO502		Food & Beverage Operations Management		2+2			
For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3	4					
Credit	2	2					

Course Code	Subject	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 502	Food & Beverage Operations Management	03	04	-	45	60	-	45	60	-	105	100	100	02	02	-	04

OBJECTIVES:

At the end of semester V the student will be able to:-

- Identify Food & Beverage setup and planning of various outlets in the department.
- Describe casual, theme restaurants etc. and how they are operated.
- How food service managers develop and manage labour & revenue control system.
- Explain how banquets and catering events are booked and planned, and describe how managers and staff members provide service for these events.
- Explain the operations of various catering establishments such as Railway, Airline & Marine caterings.

Contents of syllabus for USHO502

Unit No.	Chapter No.	TOPIC	Hours	Marks
01	1	1.1 F & B Outlet Planning 1.1.1 Objective of a good layout 1.1.2 Steps in planning of layout. (Specialty Restaurants, Coffee Shop, Room Service) 1.1.3 Factors to be considered while planning the actual ambience (Colour, light, décor, furniture & uniform) 1.2 Operational aspects of various F & B Outlets (Specialty Restaurants, Coffee Shop, Room Service) 1.2.1 Menu planning 1.2.2 Constraints of Menu planning 1.2.3 Planning of staff requirement 1.2.4 Shifts (Panzer, Straight, Split & Reliever) 1.2.5 Factors to be considered for selecting appropriate Crockery, Cutlery, Glassware, and Linen. 1.3 Elements of cost 1.3.1 Types of cost (Material, Labour & Overhead) 1.3.2 Cost Groups (Fixed, semi-fixed & variable) & types of profit (gross & net) 1.3.3 Breakeven / Cost volume profit analysis	15	15

Unit No.	Chapter No.	TOPIC			Hours	Marks
02	2	Function Catering / Banquets			15	15
		2.1 Definition, History & Importance				
		2.2 Organization of Banquet dept., duties and responsibilities.				
		2.3 Types of Banquets: Formal, Semiformal & Informal				
		2.4 Banquet Sales				
		2.5 Banquet reservation diary and booking procedure.				
		2.6 Function contract & Function prospectus				
		2.7 Banquet Menus				
		2.8 Types of service in the banquets.				
		2.9 Staffing & Duty allocation				
		2.10 Toast procedure at wedding reception & Protocol				
		2.11 Outdoor catering.				
		2.12 Glossary				
		<u>Glossary</u>				
		Audiovisual Equipment				
		Dais	Easel	Flip charts		
		Keystoning	Lavaliere microphone	Lectern		

		Monitor	Opaque projector	Overhead projector		
		Podium (rostrum)	Roving microphone	Table microphone		
		Teleconferencing				
		Exhibitions				
		Area exhibit	Booth exhibit	Consumer show		
		Exhibition (Exposition)	Floor load	Floor plan		
		Gross square feet	Hospitality suite	Island booth		
		Move-In/Move-Out Dates	Peninsula booth	Perimeter booth		
		Pipe and drape	Tabletop exhibit	Trade show/fair		
		Meeting And Convention Marketing				
Breakout room	Citywide convention	CMP (Complete Meeting Package)				
Cut-off date	Destination management companies	DMP (Day Meeting Package)				
Duo serve	Function rooms	Home run accounts				
ICW – In Conjunction With	Incentive travel house	Lead time				
Letter of agreement	Major close	MICE				
MMP (Modified Meeting Package)	Proposal	Sales blitz				
Set-up time	Slippage	Spouse program				
Tentative booking	Second-tier cities	Shoulder period				
SMERF groups	Tickler file	Trial Close				
Uni serve	Yield management					

		Types of Meetings				
		Assembly	Breakout sessions	Clinic		
		Colloquium	Concurrent sessions	Conference		
		Congress	Convention	Dealer meetings		
		Forum	Incentive meetings	Plenary session		
		Retreat	Sales meeting	Seminar		
		Summit	Symposium	Workshop		
		Misc Function Catering Terminology				
		Air walls	Cash bar	Corkage		
		Crash bar	Guaranteed and Expected number	Head count		
		Host bar	PDR	Pre-function area		
		Reader Board	Reception	Skirting		
		Theme party	Upstage			

Unit No.	Chapter No.	TOPIC	Hours	Marks
03	3	3.1 Buffet.	15	15
		3.1.1 Definition & Types of buffets. (Meal period, manner of consumption, food served & other types – Display, Gourmet & Running)		
		3.1.2 Points to be considered while planning a buffet.		
		3.1.3 Buffet equipment		
		3.1.4 Banquet layout (formal, informal & cabaret) & Space area calculation		
		3.1.5 Meeting room setups: (U Shape, Hollow Square, Classroom Theatre, Board of Directors, 'T' Shape)		
		3.2 Food and Beverage Management in various catering establishments		
		3.2.1 Railway Catering & Airline catering		
		3.2.2 Marine Catering (offshore & cruise liners)		
		3.2.3 Industrial catering		

ASSIGNMENTS

Sr. No.	Topic for Assignments	Marks
1	Design & Layout of a Specialty Restaurant, Coffee Shop or Room Service	(10)
2	Designing Function Prospectus	(10)
3	Layout of the various seating plans associated with banquets	(10)
4	Layouts of various buffet setup as per function & space requirement.	(10)

FOOD & BEVERAGE OPERATIONS MANAGEMENT (Practical)

Unit	Practical	Hours
1	1 Practice: Sample layout plans 1.1 Specialty Restaurants 1.2 Coffee Shop 1.3 Room Service 2 Compiling menus a la Carte (Specialty Restaurants, Coffee Shop, and Room Service). 3 Order-taking (Room Service). 4 Planning Duty Rota for, Specialty Restaurants, Coffee Shop, and Room Service	20
2	5 Drafting Function Prospectus 6 Table setups and arrangements for banqueting and buffet including menu designing with styles of service & Calculation of space requirement (Formal banquet, Cocktail parties, conventions, exhibition, fashion show, wedding reception).	20
3	7 Frilling (Box, Diamond & Accordion Pleated) 8 Screening of educational videos related to Railway, Airline, Marine & Industrial catering	20

Scheme of Examination (Theory)

(a) Internal assessment- 40 marks

Sr.	Evaluation type	Marks
1	ONE class test/ case study / online examination to be conducted in the given semester	20
2	ONE assignment based on curriculum to be assessed by the teacher concerned	10
3	Active participation in routine class instructional deliveries	05
4	Overall conduct as a responsible learner, communication and Leadership qualities in organizing related academic activities	05
	Total	40

(b) Semester end examination (Pattern of Question

Paper):- 60 Marks Theory

(Duration 2 hrs.)		
Questions in Examination Paper	Units	Maximum Marks
Q – 1	1	15
Q – 2	2	15
Q – 3	3	15
Q – 4	1,2,3	15
Total		60

- Question 1, 2 & 3 should be from topics mentioned in the table total 3 sub questions to be attempted of 5 marks each out of the choice of 4 sub questions.
- Question no. 4 should be of short answer type questions having six sub questions (2 from each unit) of 3 marks each. Total 5 questions are to be attempted.

Conduct of Practical Examination

Sr.	Particulars for External Practical Examination	Marks
1	Semester End Practical Examination	90
2	Journal	05
3	Viva	05
	Total	100

REFERENCE BOOKS

1. Andrews S, (2009), *Food & Beverage Service A Training Manual,(Second Edition)*, Tata McGraw-Hill Publishing Company Limited, New Delhi
2. Fuller, John, (1992), *Advanced Food Service*, Stanley Thornes Publishers Ltd., England
3. Kivela, Jaks, (1994), *Menu Planning for the Hospitality Industry*, Hospitality Press P Ltd., Melbourne
4. Lilicrap, Dennis & Cousins, John, (1994), *Food and Beverage Service*, Common Wealth Publication, New Delhi
5. Magris, Marzia, (1995), *An Introduction to Food & Beverage Studies*, Hospitality Press P Ltd, Melbourne
6. Singaravelavan .R, (2011), *Food and Beverage Service*, Oxford University Press, Delhi

FRONT OFFICE (Theory)

Name of the Programme	Duration	Semester	Course/ Course Code
B.Sc. in Hospitality Studies	Six Semester	V	Front Office (USHO 503)
Course Code	Title	Credits	
USHO503	Front Office	2	

For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3						
Credit	2						

Course Code	Subject	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 503	Front Office	03	-	-	45	-	-	45	-	-	45	100	-	02	-	-	02

OBJECTIVES:

Students will be able to:

- To understand the formulas that are applied in the front office for forecasting and evaluating
- Decision making through statistical data in Front office operations
- Understand the rules & acceptance of foreign exchange.

Contents of syllabus for USHO503

Unit No.	Chapter No.	TOPIC		
01	1	Planning Operations 1.1 Management Function 1.1.1 Planning, Organising, 1.1.2 Co-ordinating, 1.1.3 Staffing, Leading, 1.1.4 Controlling, Evaluating 1.2 Establishing Room Rate 1.2.1 Different Approaches for pricing rooms 1.2.2 Market Condition Approach, 1.2.3 Rule of Thumb, 1.2.4 Hubbart's Formula-Determining single and double rate 1.3 Special Room Rates Offered 1.3.1 Corporate / Commercial Rate, 1.3.2 Group Rate, 1.3.3 Promotional Rate, 1.3.4 Incentive Rate, 1.3.5 Family Rate, 1.3.6 Package, 1.3.7 Complimentary Rate 1.4 Forecasting Room Availability 1.4.1 Forecasting Data 1.4.1.1 Percentage of No-show, 1.4.1.2 Percentage of Cancellations, 1.4.1.3 Percentage of walk-ins, 1.4.1.4 Percentage of overstay, 1.4.1.5 Percentage of under stay, 1.4.2 Forecast formula; 1.4.3 Sample 3 and 10 days forecast; 1.4.4 Refining Forecast 1.5 Budgeting for Operations 1.5.1 Three Day Forecast; 1.5.2 Forecasting room revenue, 1.5.3 Estimating expenses, 1.5.4 Refining budget plans 1.6 Key Terms		
Unit No.	Chapter No.	TOPIC		
02	2	Evaluating Operations 2.1 Evaluating front office operations 2.1.1 Daily Operations Report, 2.1.2 Monthly Income Statement 2.1.3 Occupancy Ratios;		

		2.1.3.1 Occupancy Percentage 2.1.3.2 Room Count 2.1.3.3 House Count 2.1.3.4 Double Occupancy percentage 2.1.3.5 Bed Occupancy Percentage 2.1.3.6 Foreign Guest Percentage 2.1.3.7 Average Daily Rate 2.1.3.8 Revenue Per Available Room (RevPAR) 2.1.3.9 Average Rate Per Guest (ARG) 2.1.4 Yield Statistic. 2.1.5 Market Share Index/ Fare Market Share 2.1.6 Evaluation of Hotels By Guests 2.2 Key Terms		
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Unit No.	Chapter No.	TOPIC	Hours	Marks
03	3	3.1 Handling Foreign Currency 3.2 Foreign Currency Exchange 3.3 Procedures to be followed while exchanging Foreign Currency 3.4 Currencies accepted by RBI 3.5 Foreign Exchange Certificate- Format 3.6 Foreign Exchange Settlements using Credit Cards. 3.7 Export Promotion Capital Goods Scheme (EPCG)		

Contents of syllabus for USHO505

FRONT OFFICE (Practical)

Unit	Practical	Hours
1	Group Discussion	
2	Situation Handling	
3	Manpower Planning	

FRONT OFFICE (ASSIGNMENTS)

Sr. No.	Topic for Assignments	Marks
1	Designing of Tariff card & Designing of Brochure	10

Scheme of Examination (Theory)

(a) Internal assessment- 40 marks

Sr.	Evaluation type	Marks
1	ONE class test/ case study / online examination to be conducted in the given semester	20
2	ONE assignment based on curriculum to be assessed by the teacher concerned	10
3	Active participation in routine class instructional deliveries	05
4	Overall conduct as a responsible learner, communication and Leadership qualities in organizing related academic activities	05
	Total	40

(b) Semester end examination (Pattern of Question Paper):- 60 Marks

Theory

(Duration 2 hrs.)		
Questions in Examination Paper	Units	Maximum Marks
Q – 1	1	15

Q – 2	2	15
Q – 3	3	15
Q – 4	1,2,3	15
Total		60

- Question 1, 2 & 3 should be from topics mentioned in the table total 3 sub questions to be attempted of 5 marks each out of the choice of 4 sub questions.
- Question no. 4 should be of short answer type questions having six sub questions (2 from each unit) of 3 marks each. Total 5 questions are to be attempted.

REFERENCE BOOKS

1. Andrews, Sudhir, (1995), *Hotel Front Office Training Manual*, The Tata M'cGraw Hill, New Delhi.
2. Andrews, Sudhir, (2007), *Front Office Management & Operations*, The Tata M'cGraw Hill, New Delhi.
3. Aggarwal Ravi, (2002), *Hotel front Office*, sublime Publications, Jaipur.
4. Bhatnagar S.K., (2002), *Front office Management*, Frank Bros & Co., New Delhi.
5. Chakravarti B.K., (1999), *Front Office Management in Hotel*, CBS Publisher, New Delhi.
6. Chakrawarti B.K., (2006), *Concept of Front Office Management*, APH Publishing, New Delhi.
7. Singh R.K., (2006), *Front Office Management*, Aman Publication New Delhi.
8. Tewari Jatashankar R., (2009), *Hotel Front Office Operations & Management*, Oxford University Press, New Delhi.

HOUSEKEEPING (Theory)

Name of the Programme	Duration	Semester	Course/ Course Code
B.Sc. in Hospitality Studies	Six Semester	V	Housekeeping (USHO 504)
Course Code	Title	Credits	
USHO504	Housekeeping	2	

For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3						
Credit	2						

Course Code	Subject	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 504	Housekeeping	03	-	-	45	-	-	45	-	-	45	100	-	02	-	-	02

OBJECTIVES:

At the end of semester V:

- Explain and apply the guidelines for hiring various housekeeping contract services.
- Manage the man power planning in the housekeeping department in different category of hotels.
- Apply the elements and concept of interior decorations & elevations.

Contents of syllabus for USHO504

Unit No.	Chapter No.	TOPIC	Hours	Marks
01	1	Current Trends In Housekeeping 1.1 Green housekeeping practices 1.2 Cleaning equipment and agents 1.3 Guest supplies and amenities 1.4 Level of service (Limited Service, Mid-Range and Full Service)	15	15
	2	Contract Services / Outsourcing 2.1 Types of contract 2.2 Guidelines for hiring contract services 2.3 Advantages and disadvantages of contract service		
	3	Manpower Planning 3.1 Determining staff strength (fixed staff) 3.2 Scheduling staff (Duty Rosters)		
Unit No.	Chapter No.	TOPIC	Hours	Marks
02	4	Lighting And Lighting Fixtures 4.1 Lighting for different areas of the hotel 4.2 Functional and aesthetic aspects of light	15	15
	5	Windows and Window Treatment 5.1 Types of windows and window treatment 5.2 Selection and care		
	6	Wall and Ceiling Finishes 6.1 Types 6.2 Selection 6.3 Care		
Unit No.	Chapter No.	TOPIC	Hours	Marks
03	7	Carpets and Floor Coverings 7.1 Types 7.2 Selection 7.3 Care	15	15
	8	Interior Designing 8.1 Elements of design 8.2 Principles of design 8.3 Colour schemes		

HOUSEKEEPING (ASSIGNMENTS)

Sr. No.	Topic for Assignments	Marks
1	Calculating Staffing levels / Manpower Planning (Small to medium hotel)	(10)
2	Calculating curtain material requirements and costing for different Window Treatments	(10)
3	Samples / brochures / pictures and information for Floor Coverings	(10)
4	Samples / brochures / pictures and information for Wall Finishes.	(10)
5	Sourcing of various housekeeping contract service providers in Mumbai – High rise cleaning/ Façade Cleaning/ Carpet Shampooing, Washroom Services etc.	(10)

Scheme of Examination (Theory)

(a) Internal assessment- 40 marks

Sr.	Evaluation type	Marks
1	ONE class test/ case study / online examination to be conducted in the given semester	20
2	ONE assignment based on curriculum to be assessed by the teacher concerned	10
3	Active participation in routine class instructional deliveries	05
4	Overall conduct as a responsible learner, communication and Leadership qualities in organizing related academic activities	05
	Total	40

(b) Semester end examination (Pattern of Question

Paper):- 60 Marks Theory

(Duration 2 hrs.)		
Questions in Examination Paper	Units	Maximum Marks
Q - 1	1	15
Q - 2	2	15
Q - 3	3	15
Q - 4	1,2,3	15
Total		60

- Question 1, 2 & 3 should be from topics mentioned in the table total 3 sub questions to be attempted of 5 marks each out of the choice of 4 sub questions.
- Question no. 4 should be of short answer type questions having six sub questions (2 from each unit) of 3 marks each. Total 5 questions are to be attempted.

REFERENCE BOOKS

- 1 Raghubalan G., Raghubalan Smritee, (2007 – 2009), *Hotel Housekeeping Operations and Management*, 2nd Edition, Oxford University Press.
- 2 Singh Malini & George Jaya B., (2008), *Housekeeping Operations, Design and Management*, 1st Edition, Jaico Publications.
- 3 Jones Thomas J.A., (2005), *Professional Management of Housekeeping Operations*, 4th Edition, John Wiley & Sons.
- 4 Andrews Sudhir, (2007), *Text Book of Hotel Housekeeping Management & Operations*, 1st Edition, Tata McGraw Hill.

ROOMS DIVISION MANAGEMENT (Practical)

Name of the Programme	Duration	Semester	Course/ Course Code
B.Sc. in Hospitality Studies	Six Semester	V	Rooms Division Management (USHO 505)
Course Code	Title	Credits	
USHO505	Rooms Division Management	2	

For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact		4					
Credit		2					

Course Code	Subject	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 505	Rooms Division Management	03	04	-	45	60	-	45	60	-	105	100	100	02	02	-	04

OBJECTIVES:

- To enhance the capabilities of student in understanding the contemporary hospitality and general issues through discussion and managing situations.
- To understand the importance of manpower planning in accommodation operation.
- To practically learn and demonstrate housekeeping operation and get an insight into the concept of colour wheel and elements & principles of design.

Contents of syllabus for USHO505

FRONT OFFICE (Practical)

Unit	Practical	Hours
1	Group Discussion	10
2	Situation Handling	10
3	Manpower Planning	10

HOUSEKEEPING (Practical)

Unit	Practical	Hours
1	Creating SOPs (Standard Operating Procedure) for: • Turn-down service • Entering a guest room • Cleaning WC (Water Closet) • Cleaning and setting Vanity counter • Cleaning shower cubicle / bathtub • Vacuum Cleaning • Dusting guest room • Laundry collection • Stacking Maid's Trolley • Elevator cleaning	10
2	Creating Area Checklist (Rooms and Public Area)	05
3	Illustration of a colour wheel	05
4	Identifying & Creating colour schemes	10

Scheme of Examination (Practical)

Conduct of Practical Examination

Sr.	Particulars for External Practical Examination	Marks
1	Semester End Practical Examination	90
2	Journal	05
3	Viva	05
	Total	100

CORPORATE ENGLISH (Theory)

Name of the Programme	Duration	Semester	Course/ Course Code
B.Sc. in Hospitality Studies	Six Semester	V	Corporate English (USHO 506)
Course Code	Title	Credits	
USHO506	Corporate English	2+2	

For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3	4					
Credit	2	2					

Course Code	Subject	Class Room Instruction									T o t a l	Total Marks		Credits			T o t a l
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 506	Corporate English	03	04	-	45	60	-	45	60	-	105	100	100	02	02	-	04

OBJECTIVES:

- To enable the student to enhance their communication skills (verbal & written)
- To adapt to the challenges in the global scenario.
- To practice the dynamics of business etiquettes.

Contents of syllabus for USHO506

Unit No.	Chapter No.	TOPIC	Hours	Marks
01	1	General Business English 1.1 Business English basics 1.2 General vocabulary 1.3 Introduction to International English	15	15
	2	Grammar 2.1 Words and Phrases 2.2 Overview of tenses 2.3 Other common areas of difficulty for Indian speakers 2.4 Prepositions, time expressions & pronouns 2.5 Articles and nouns 2.6 Sentence Construction		
	3	Group Discussions 3.1 Group discussion competencies 3.2 Active listening 3.3 Expanding Arguments 3.4 Functional language 3.5 Paragraph development		
	4	Public speaking & Presentation skills 4.1 Structuring your presentation 4.2 Linguistic techniques 4.3 Introduction to effective openings - task 4.4 Hooks : seeking the audience attention 4.5 Sign posting language 4.6 The visual and vocal components 4.7 Visual aids 4.8 Other essential Sub Skills 4.9 Body language 4.10 Dealing with questions 4.11 Effective Presentation Strategies 4.12 Interviews / Group Discussion		

Unit No.	Chapter No.	TOPIC	Hours	Marks
02	5	Vocabulary 5.1 Word building 5.2 Dictionary skills	15	15
	6	Power writing 6.1 The writing process		

		6.2 The Power writing process 6.3 Focus on content 6.4 Make your purpose clear 6.5 Make the intended action explicit 6.6 Focus on structure 6.7 Focus on language 6.8 Complete and concise messages		
	7	Interpersonal Skills		

Unit No.	Chapter No.	TOPIC	Hours	Marks
03	8	Academic Writing 8.1 The writing process 8.2 Structuring an essay 8.3 Writing ideal introductions 8.4 General statements 8.5 Paragraph construction 8.6 Organising main ideas & controlling ideas	15	15
	9	Topic sentences 9.1 Supporting sentences 9.2 Transition words & phrases 9.3 Plagiarism / Referencing 9.4 Critical thinking skills 9.5 Paraphrasing & writing effective conclusion		
	10	Corporate Communication 10.1 Business letters, Emails, Memo, Report 10.2 Meetings, Team work, MICCEE (Meetings, Incentives, Conventions, Conference, Events & Exhibition) 10.3 Cross cultural communication		

CORPORATE ENGLISH (Practical)

Unit	Practical	Hours
1	1. Revision of Grammar 2. Presentation I – Current Issues 3. Group Discussion	20
2	4. Personal Interviews 5. Presentation II (Groups & Individual) 6. Structuring the presentation 7. Visual Aids to enhance effective presentation	20
3	8. Formal E-mail & Telephonic etiquettes, 9. Active listening, body language, posture, eye contact 10. Academic writing (Report writing, essay writing, assignment) 11. Role play, conducting, meeting / conference	20

Scheme of Examination (Theory)

(a) Internal assessment- 40 marks

Sr.	Evaluation type	Marks
1	ONE class test/ case study / online examination to be conducted in the given semester	20
2	ONE assignment based on curriculum to be assessed by the teacher concerned	10
3	Active participation in routine class instructional deliveries	05
4	Overall conduct as a responsible learner, communication and Leadership qualities in organizing related academic activities	05
	Total	40

(b) Semester end examination (Pattern of Question Paper):- 60 Marks Theory

First Semester (Duration 2 hrs.)		
Questions in Examination Paper	Units	Maximum Marks
Q - 1	1	15
Q - 2	2	15
Q - 3	3	15
Q - 4	1,2,3	15
Total		60

- Question 1, 2 & 3 should be from topics mentioned in the table total 3 sub questions to be attempted of 5 marks each out of the choice of 4 sub questions.
- Question no. 4 should be of short answer type questions having six sub questions (2 from each unit) of 3 marks each. Total 5 questions are to be attempted.

Conduct of Practical Examination

Sr.	Particulars for External Practical Examination	Marks
1	Semester End Practical Examination	90
2	Journal	05
3	Viva	05
	Total	100

REFERENCE BOOKS

1. Thill, J.V. and Bovee C.L. (2005). *Excellence in Business Communication*, 6th ed. USA: Pearson Prentice-Hall
2. Kumar, S. and Lata, P. - (2012). *Communication Skills*, 1st ed. Oxford University press
3. Sen, L. (2008). *Communication Skills*, 2nd ed Prentice Hall of India Private Ltd.
4. Raman, M and Sharma, S. (2004) *Technical Communication*, Oxford University Press,
5. Francis, S. (2009) *Effective Business Communication*, 1st ed. Macmillan Publishers Pvt. Ltd

ENVIRONMENTAL & SUSTAINABLE TOURISM (Theory)

Name of the Programme	Duration	Semester	Course/ Course Code
B.Sc. in Hospitality Studies	Six Semester	V	Environmental & Sustainable Tourism (USHO 507)
Course Code	Title	Credits	
USHO507	Environmental & Sustainable Tourism	2	

For Course Per week 1 lecture/period is 60 minutes duration				For Subject per week 1 lecture/period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3						
Credit	2						

Course Code	Subject	Class Room Instruction									Total	Total Marks		Credits			Total
		Per Week			Per Semester			Per Semester Hrs									
		L	P	T	L	P	T	L	P	T		TH	PR	L	P	T	
USHO 507	Environmental & Sustainable Tourism	03	-	-	45	-	-	45	-	-	45	100	-	02	-	-	02

OBJECTIVES:

At the end of semester V:

- The student will be able to understand and explain the importance of Environmental and Sustainable Tourism.
- The student will be able to identify and explain Environmental changes due to Tourism.
- The student will comprehend Sustainability of Tourism for future generations.
- The student will be able to understand about the World's fastest growing Travel & Tourism industry.

• **Contents of syllabus for USHO504**

Unit No.	Chapter No.	TOPIC	Hours	Marks
01	1	Environmental Studies 1.1 Definition, Scope and Importance 1.2 Need for public awareness 1.3 Renewable & Non-renewable Resources (Definition & Importance) 1.4 Consumerism & Waste Products	15	15
	2	Introduction to Tourism & Travel 2.1 Flashback – From early times till today (Purpose of travel in ancient times, invention of wheel, contribution of Thomas Cook, today's scenario). 2.2 Definition of Tourism as stated by U.N.W.T.O. 2.3 Types of Tourism-Pilgrimage, Business Tourism, Health Tourism, Adventure Tourism, Sports Tourism, Culinary & Wine Tourism. 2.4 Definition of Travel 2.5 Various modes of Transport – Land (Rail and Road), Water (Ferries and Cruises), Air.		

Unit No.	Chapter No.	TOPIC	Hours	Marks
02	3	Tourism Organisations 3.1 National/Domestic Organisations (M.T.D.C., I.T.D.C.) 3.2 International Organisations (U.N.W.T.O., W.T.T.C., U.F.T.A.A., U.N.E.S.C.O., S.T.I.)	15	15
	4	Sustainable Development 4.1 Why Sustainable Development? 4.2 Rio Summit 4.3 Impact of Tourism on the World		

Unit No.	Chapter No.	TOPIC	Hours	Marks
03	5	Sustainable Tourism 5.1 Introduction to Sustainable Tourism 5.2 Sustainable Tourism with respect to Developed Countries (List of these countries, one major destination from each country that requires Sustainable development) 5.3 Sustainable Tourism with respect to Developing Countries	15	15

		(List of these countries, one major destination from each country that requires Sustainable development)		
		5.4 Sustainable Tourism in India		
		5.5 Sustainable Tourism in Mumbai		
		5.6 Sustainable Tourism as an Umbrella – Ecotourism, UNESCO Sites.		
		5.7 Impact of Travel on Sustainable Tourism		
		5.8 Impact of Accommodation on Sustainable Tourism		
		5.9 Responsible Tourism – Guidelines, “Making Tourism More Sustainable – A Guide for Policy Makers” – Role of United Nations Environment Programme (UNEP).		

ASSIGNMENTS

Sr. No.	Topic for Assignments	Marks
1	Sustainable Tourism advice for any location / place in India	10
2	Environmental effects of Tourism	

Scheme of Examination (Theory)

(a) Internal assessment- 40 marks

Sr.	Evaluation type	Marks
1	ONE class test/ case study / online examination to be conducted in the given semester	20
2	ONE assignment based on curriculum to be assessed by the teacher concerned	10
3	Active participation in routine class instructional deliveries	05
4	Overall conduct as a responsible learner, communication and Leadership qualities in organizing related academic activities	05
	Total	40

(b) Semester end examination (Pattern of Question Paper):- 60 Marks Theory

(Duration 2 hrs.)		
Questions in Examination Paper	Units	Maximum Marks
Q - 1	1	15
Q - 2	2	15
Q - 3	3	15
Q - 4	1,2,3	15
Total		60

- Question 1, 2 & 3 should be from topics mentioned in the table total 3 sub questions to be attempted of 5 marks each out of the choice of 4 sub questions.
- Question no. 4 should be of short answer type questions having six sub questions (2 from each unit) of 3 marks each. Total 5 questions are to be attempted.

REFERENCE BOOKS

1. Roday, S., (2012), *Tourism Operation and Management*, 1st Edition, Oxford University Press.
2. Narasaiah, M., (2003), *Tourism and the Environment*, 1st Edition, Discovery Publishing House.
3. Holden, A., (2008), *Environment & Tourism*, 2nd Edition, Routledge.
4. Sharpley, R., (2009), *Tourism Development & the Environment: Beyond the Sustainability*, 1st Edition, Earthscan.
5. Zeppel, H., (2006), *Indigenous Ecotourism*, 3rd Edition, Cabi publications.
6. Raj, A., (2007), *Sustainability Profitability & Successful Tourism*, 1st Edition, Kanishka Publishers.

NOTE: TUTION FEE FOR THE SEMESTER Rs. 65,000

