



PSGR Krishnammal College for Women



UGC Certified College of Excellence • Autonomous • Affiliated to Bharathiar University • ISO 9001:2015 Certified • Reaccredited with 'A' Grade by NAAC • Ranked 22nd in NIRF 2019 by MHRD

DEPARTMENT OF B.COM (BUSINESS ANALYTICS)

CHOICE BASED CREDIT SYSTEM & OUTCOME BASED EDUCATION SYLLABUS

BACHELOR OF COMMERCE (BUSINESS ANALYTICS)

2019 - 2022



PROGRAMME OUTCOMES

After completion of the programme, the student will be able to

PO1 : To instill conceptual and procedural foundations of business analytical methods and techniques integrated with disciplines such as commerce, mathematics, statistics, management, economics and computer science.

PO2 : To understand data science and its role of descriptive, predictive and prescriptive analytics using data mining techniques in problem solving and decision making that is imperative for business organizations.

PO3 : To inculcate programming knowledge and ability to explore Big Data technologies, and algorithms for data visualization and data inference of different industries.

PO4 : To apply appropriate analytic tools and techniques to resolve complex business analytical problems in various industry sectors and domains with hands on experience in relevant software.

PO5 : To identify and resolve practically relevant business analytic tools to handle data based on diversified commerce conjecture to build and sustain a competitive advantage by expanding analytics capabilities for successful career.

PROGRAMME SPECIFIC OUTCOME

The students at the time of graduation will

PSO1 : Hands-on learning of leading analytical tools.

PSO2 : To acquire theoretical knowledge of data science tools, but will also gain exposure to business perspectives.

PSO3 : The Career opportunities after completion of B.Com (BA) degree are Business Analyst, Quantitative Analyst, Operations Research Analyst and Market research Analyst.

QUESTION PAPER PATTERN

ASSESSMENT PATTERN FOR THEORY, ACCOUNTING, FINANCE AND TAX PAPERS CA I & II – Duration: 2 Hrs

Bloom's Category	Section	Marks		Total
Remember (K ₁)	A – 5*2 marks (No Choice)	10	1 or 2 sentences	50
Understand (K ₂)	B - 4 * 5 marks (No Choice)	20	250 words	
Apply, Analyse (K ₃ , K ₄)	C – 2 out of 3* 10 marks	20	500 words	

ASSESSMENT PATTERN

Model Examination & End Semester – Duration: 3 Hrs

Bloom's Category	Section	Marks		Total
Remember (K ₁)	A – 11 out of 13* 2 marks (open choice)	22	1 or 2 sentences or small problems	100
Understand(K ₂)	B – 5 out of 7 *6 marks (open choice)	30	300 words or problems	
Apply, Analyse (K ₃ , K ₄)	C – 4 out of 6* 12 marks (open choice)	48	600 – 800 words or problems	

QUESTION PAPER PATTERN FOR SKILL BASED SUBJECT

Continuous Internal Assessment: 25 Marks

Duration: 1Hr

Marks:25

Section A 4 Questions out of 6 questions 4*4= 16

Section B 1Question out of 2 questions 1*9=9

End Semester Examination: 50 Marks

Duration: 3Hrs

Marks: 50

Section A 4 Questions out of 6 questions 4*5= 20

Section B 2 Questions out of 3 questions 2*15=30

ADVANCED LEARNERS COURSE (ALC)

Continuous Internal Assessment : 25 Marks

SECTION	MARKS	TOTAL
A – 4 / 6 X 4 Marks	16	25
B – 1 / 2 X 9 Marks	9	

End Semester Examination: 75 Marks

SECTION	MARKS	TOTAL
A-5/8X5=25 Marks	25	75
B – 5/8X10=50 Marks	50	

VALUE EDUCATION AND HUMAN RIGHTS / WOMEN STUDIES / AMBEDKAR STUDIES / GANDHIAN STUDIES / ENTREPRENEURSHIP / ENVIRONMENTAL STUDIES**Continuous Internal Assessment : 50 Marks**

SECTION	MARKS	TOTAL
A – 4 / 6 X 5 Marks	20	50
B – 2 / 3 X 15 Marks	30	

Value Education and Human Rights & Environmental Studies two internal tests will be conducted for 50 marks each and the total marks secured will be equated to a maximum of 75 marks and 25 marks is allotted for project / group discussion / presentation of a report.

INFORMATION SECURITY**Continuous Internal Assessment : 50 Marks**

SECTION	MARKS	TOTAL
A – 5 / 8 X 2 Marks	10	40
B – 6 / 8 X 5 Marks	30	

INTERNSHIP TRAINING

Duration - (2 weeks) – submission of certificate

Subject Code - INST1

The practical training is essential to expose the students to the real life work situation and to strengthen the conceptual knowledge gained in the classroom. 2 weeks internship is to be arranged during the summer vacation after the fourth semester. The training shall be in banking, financial institution, or an industrial enterprise or consultancy organizations. Candidates should maintain a work dairy and submit a report at the end of the study. The department to conduct a viva-voce. The Principal of the college and the Head of the Department shall issue a certificate to the effect that the student had satisfactorily undergone the internship training for the prescribed period. The report should contain a minimum of 40 pages.

Evaluation:

Work dairy	15 marks
Attendance	10 marks
Report	50 marks
Viva voce	25 marks
TOTAL	100 Marks

PROJECT VIVA VOCE

Subject Code : DA16PROJ

Duration : 5 Hrs per Week

Credit : 5

Project work, which is compulsory, carries 100 marks. Group of students (3 to 5 students) should select a topic for the project work in the beginning of the fifth semester and submit the project report (dissertation) at the end of the fifth semester. The guide and an internal examiner shall evaluate the project report and conduct the viva. The project work shall be related to commerce and its related applications.

Project Evaluation

Internal 20 Marks:

- Topic – 2 Marks
- Review of Literature – 3 Marks
- Research, Design & data Collection – 10 Marks
- Analysis, Conclusion & Rough Draft – 5 Marks

External 60 Marks:

- Quality of Idea – 5 Marks
- Application of relevant Tools – 10 Marks
- Presentation of Report – 15 Marks
- Presentation of Project – 10 Marks (PPT)
- Explanation (Clarity) – 10 Marks
- Team Spirit – 5 Marks
- Plagiarism – 5 Marks

VIVA – 20 Marks**COMMUNITY ORIENTED SERVICE**

30 hours of community oriented service is mandatory for UG students during holidays before the end of the fourth semester and the students can take up in any of the following fields: Literacy, Public Health, Hygiene, Crisis Management(Training the Public) Traffic Regulation, Green Projects etc., in Villages, Schools, Orphanages, Hospitals, Old Age Homes, Prisons and SHG groups.

SKILL BASED SUBJECT

Students have to select any one of the following skill based subject in the III Semester and the papers will be spread over four semesters (III, IV, V, VI semester). The exams will be conducted for these papers in the end of the IV and VI semester.

JOB ORIENTED COURSE

Students to complete a job oriented course for 60 hours from a pool of courses offered by different departments before the end of Semester-V.

ALLIED PAPERS

Two options are given for the students in the allied papers in the III and IV semester and they have to choose any one paper. Exams will be conducted in the respective semesters.

ONLINE OPEN COURSE

Open Course in the Second Semester to be Substituted by Online Courses Offered by Various Departments and Students Should Opt Any One of the Course (Inter Disciplinary) and Completion Certificate to be Verified by the Department and to be Ensured by the End of the Semester - V

WEIGHTAGE ASSIGNED TO VARIOUS COMPONENTS OF
CONTINUOUS INTERNAL ASSESSMENT

Theory

	CIA I	CIA II	Model Exam	Assignment/ Class Notes	Seminar	Quiz	Class Participation	Library Usage	Attendance	Max. Marks
Core / Allied	5	5	6	4	5	4	5	3	3	40
SBS	5	5	15	-	-	-	-	-	-	25
ALC		10	15	-	-	-	-	-	-	25
Information Security	40	40		10		10				100

Practical

	Model Exam	Lab Performance	Regularity in Record Submission	Attendance	Maximum Marks
Core / Allied / SBS	12	20	5	3	40

RUBRICS

Assignment/ Seminar

Maximum - 20 Marks (converted to 4 marks)

Criteria	4 Marks	3 Marks	2 Marks	1 Mark
Focus Purpose	Clear	Shows awareness	Shows little awareness	No awareness
Main idea	Clearly presents a main idea.	Main idea supported throughout	Vague sense	No main idea
Organisation: Overall	Well planned	Good overall organization	There is a sense of organization	No sense of organization
Content	Exceptionally well presented	Well presented	Content is sound	Not good
Style: Details and Examples	Large amounts of specific examples and detailed description	Some use of examples and detailed descriptions	Little use of specific examples and details	No use of examples

CLASS PARTICIPATION

Maximum -20 Marks (converted to 5 marks)

Criteria	5 Marks	4 Marks	3 Marks	2 Marks	1 Mark	Points scored
Level of Engagement in Class	Student proactively contributes to class by offering ideas and asks questions more than once per class.	Student proactively contributes to class by offering ideas and asks questions once per class.	Student contributes to class and asks questions occasionally	Student rarely contributes to class by offering ideas and asking no questions	Student never contributes to class by offering ideas	
Listening Skills	Student listens when others talk, both in groups and in class. Student incorporates or builds off of the ideas of others.	Student listens when others talk, both in groups and in class.	Student listens when others talk in groups and in class occasionally	Student does not listen when others talk, both in groups and in class.	Student does not listen when others talk, both in groups and in class. Student often interrupts when others speak.	
Behavior	Student almost never displays disruptive behavior during class	Student rarely displays disruptive behavior during class	Student occasionally displays disruptive behavior during class	Student often displays disruptive behavior during class	Student almost always displays disruptive behavior during class	
Preparation	Student is almost always prepared for class with required class materials	Student is usually prepared for class with required class materials	Student is occasionally prepared for class with required class materials	Student is rarely prepared for class with required class materials	Student is almost never prepared for class.	
					Total	

MAPPING OF POs WITH COs

COURSE	PROGRAMME OUTCOMES				
	P01	P02	P03	P04	P05
COURSE – DA17C01					
CO1	S	L	L	L	M
CO2	S	L	L	M	M
CO3	S	L	L	L	M
COURSE – DA18C02					
CO1	S	S	L	M	M
CO2	S	S	L	M	M
CO3	M	L	L	L	M
COURSE – DA18CP1					
CO1	S	M	L	L	M
CO2	S	S	S	S	S
CO3	S	S	M	M	S
COURSE –DA18C03					
CO1	S	S	S	S	M
CO2	S	S	S	S	M
CO3	S	S	S	S	M
COURSE -DA18CP2					
CO1	S	S	S	S	M
CO2	S	S	S	S	M
CO3	S	S	S	S	M
COURSE - DA19C04					
CO1	S	S	L	M	M

CO2	M	S	M	L	L
CO3	M	M	S	S	L
COURSE - DA19C05					
CO1	S	L	L	S	S
CO2	S	M	M	M	S
CO3	S	M	L	S	S
COURSE - DA19C06					
CO1	S	S	S	S	M
CO2	S	S	S	S	S
CO3	M	S	S	S	M
COURSE - AF19A01					
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
COURSE - DA19A02					
CO1	S	M	L	M	L
CO2	S	S	M	S	S
CO3	S	M	M	M	M
COURSE - DA17CP3					
CO1	S	S	S	S	L
CO2	S	S	S	S	L
CO3	S	S	S	S	L
COURSE - DA19C07					
CO1	S	S	M	S	S
CO2	S	M	S	S	M
CO3	M	S	S	M	M

COURSE - DA19C08					
CO1	S	S	M	M	L
CO2	S	M	S	S	S
CO3	S	M	M	M	S
COURSE - CM19C09					
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	M	S	M
COURSE – DA19A03					
CO1	S	S	L	M	M
CO2	S	S	S	L	L
CO3	S	S	S	S	S
COURSE – AF19A04					
CO1	S	S	S	S	M
CO2	S	S	S	S	M
CO3	S	S	S	S	M
COURSE – DA17CP4					
CO1	S	S	L	M	M
CO2	S	M	M	S	M
CO3	S	M	L	M	S
COURSE – DA19TA01					
CO1	S	S	L	M	M
CO2	S	M	M	S	M
CO3	S	M	L	M	S
COURSE – DA19TAP1					
CO1	S	S	L	M	M
CO2	S	M	M	S	M
CO3	S	M	L	M	S

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA17C01	FINANCIAL ACCOUNTING	Core	56	4	-	4

Preamble

- To provide a strong foundation in fundamental accounting concepts, various elements of financial statements and relevant accounting standards.
- To be familiar with partnership, companies and inventory accounts.
- To inculcate the knowledge of international financial reporting standards.

Prerequisite

- No prerequisite required

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Relate accounting concepts and reproduce financial statements	K ₁
CO2	Understand and interpret accounts of Partnership firms, Companies and inventory accounts.	K ₁ , K ₂
CO3	Examine and interpret financial Reports	K ₃

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	L	M
CO2	S	L	L	M	M
CO3	S	L	L	L	M

S- Strong; M-Medium; L-Low

Syllabus

UNIT I

(11 Hrs)

Accounting Concepts and Accounting Conventions–Journal –Ledger–Trial Balance – Final Accounts – AS 1, 5.

UNIT II

(11 Hrs)

Depreciation–AS 6-Bank Reconciliation Statement –AS 27.

UNIT III

(11 Hrs)

Consignment–Joint Venture.

UNIT IV**(12 Hrs)**

Partnership Accounts–Admission, Retirement and Death.

UNIT V**(11 Hrs)**

Company Accounts–Share capital- Issue and Forfeiture of Shares-IFRS.

Distribution of Marks: 20% Theory, 80%**Problems Text Book:**

S.No.	Authors	Title of the Book	Publishers	Year of Publication
1	Jain S P and Narang K L	Advanced Accountancy I	Kalyani Publishers	Reprint 2016 & 18 th Edition
2	Jain S P and Narang K L	Advanced Accountancy	Kalyani Publishers	2014, 20 th Edition

Reference Books:

S.No.	Authors	Title of the Book	Publishers	Year of Publication
1	Nagarajan K.L, Vinayagam. N & P L Mani	Financial Accounting	Sultan Chand & Sons	2010, 1 st Edition
2	Reddy T.S & Murthy	Financial Accounting	Margham Publications	2016, 6 th Edition

Course Designers

1. Dr. M. RajaRajeswari
2. Mrs. M. Uma

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA18C02	FUNDAMENTALS OF BUSINESS ANALYTICS	CORE	56	4	-	4

Preamble

- To achieve and establish vital understanding of big data application in business intelligence.
- To institute the concept of systematic transformation of process-oriented data into information of underlying business process.
- To exhibit knowledge of data analysis techniques and to apply principles of data sciences integrating enterprise reporting.

Prerequisite

- Basic knowledge in computers

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO STATEMENT	KNOWLEDGE Level
CO1.	To identify the importance of data science in business process.	K1
CO2.	To discuss data integration and modeling techniques.	K2
CO3.	To examine business intelligence concepts for enterprise reporting.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	L	M	M
CO2.	S	S	L	M	M
CO3.	M	L	L	L	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(11 Hrs)

Introduction to the BA Role: Business Analysis -Business Analyst - The evolving role of the Business Analyst - The BA roadmap: different levels of business analysis - The basic rules of Business & Business Analysis - Classical Requirements and Tasks performed by Business Analysts. **Project Definition and Scoping:** Aspects - Projects phases - Project approaches (Waterfall, Agile, Iterative, Incremental) - The role of the BA across the project lifecycle.

Unit II

(11 Hrs)

Business view of Information Technology Applications: Core business process – Baldrige Business Excellence framework - Key purpose of using IT in business - Enterprise Applications - Information users and their Requirements. **Data Definition:** Types of Data – Attributes and Measurement – Types of data sets – Data quality – Types of Digital Data.

Unit III

(12 Hrs)

Introduction to OLTP and OLAP – OLTP – OLAP – Different OLAP Architectures – OLTP and OLAP – Data models for OLTP and OLAP – Role of OLAP Tools in BI Architecture. **Business Intelligence –** Business Intelligence defined – Evolution of BI and Role of DSS, EIS, MIS and Digital Dashboards – Need for BI – BI value chain – Introduction to Business Analytics. **BI Definitions and Concepts –** BI Component Framework – Need for BI – BI Users – Business Intelligence applications – BI roles and responsibilities.

Unit IV

(11 Hrs)

Data Integration – Data Warehouse – Goals – Data sources – Extract – Transform, Load – Data Integration – Technologies – Data Quality maintenance – Data profiling. **Data Modelling –** Basics – Types – Techniques – Fact table – Dimension Table – Typical Dimensional Models – Dimensional modeling life cycle – Designing the Dimensional Model.

Measures, Metrics, KPIs and Performance Management – Definition – Measurement system terminology – Role of Metrics and metrics supply chain – fact based decision making and KPIS use of KPIs – potential source for metrics. **Enterprise Reporting** – Report standardization – Balanced score card – dashboards – scoreboards vs. dashboards. **BI in Real world** – BI and mobility – BI and cloud computing – BI for ERP systems – Social CRM and BI.

Text Book

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1.	Study Material – Unit I			
2.	RN Prasad, Seema Acharya- Unit II-V	Fundamentals of Business Analytics	Wiley	2015 Revised Edition
3.	Pang-Ning Tan	Introduction to Data Mining	Pearson Education	2015 Revised Edition

Reference Books

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1.	Haydn Thomas - Demonoid	Business Analysis Fundamentals	Pearson	2015 Revised Edition

Pedagogy

Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

1. M. RajaRajeswari
2. S. Deepika

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA18CP1	Computer Application Practical I–Analysis With Excel	CORE	27	-	2	1

Preamble

- To inculcate the knowledge of MS Excel
- To understand the basic statistics tools & methods

Prerequisite

- No prerequisite required

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
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CO1	To understand the Analytical commands in Excel	K1
CO2	To identify the statistical tools for problem solving	K2
CO3	To analyze a program using appropriate analytical tool	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	L	L	M
CO2	S	S	S	S	S
CO3	S	S	M	M	S

S- Strong; M-Medium; L-Low

- Suppose that at the beginning of May 2012 you purchased shares in Apple, Inc. (Nasdaq: AAPL). It is now five years later and you decide to evaluate your holdings to see if you have done well with this investment. The table below shows the market prices of AAPL.

DATE	PRICE
2012	59.77
2013	121.19
2014	188.75
2015	135.81
2016	256.88
2017	337.41

- Enter the data, as shown, into a worksheet and format the table as shown.
- Create a formula to calculate rate of return for each year. Format the results as percentages with two decimal places.
- Calculate the total return for the entire holding period. What is the compound average annual rate of return?
- Create a Line chart showing the stock price from May 2006 to May2011. Make sure to title the chart and label the axes. Now, create an XY Scatter chart of the same data. What are the differences between these types of charts? Which type of chart is more appropriate for this data?
- Experiment with the formatting possibilities of the chart. For example, you might try changing it to a 3-D Line chart and fill the plot area with a marble background. Is there any reason to use this type of chart to display this data? Do the “enhancements” help you to understand the data?

2. In your position as research assistant to a portfolio manager, you need to analyze the profitability of the companies in the portfolio. Using the data for Chevron Corporation below:

FISCAL YEAR	2017	2016	2015	2014	2013
TOTAL REVENUE	1,98,198	1,71,636	2,64,958	2,20,904	2,04,892
NET INCOME	19,024	10,483	23,931	18,688	17,138

- a) Calculate the net profit margin for each year.
- b) Calculate the average annual growth rates for revenue and net income using the **GEOMEAN** function. Is net income growing more slowly or faster than total revenue? Is this a positive for your investment in the company?
- c) Calculate the average annual growth rate of total revenue using the **AVERAGE** function. Is this result more or less accurate than your result in the previous question? Why?
- d) Create a Column chart of total revenue and net income. Be sure to change the chart so that the x-axis labels contain the year numbers, and format the axis so that 2017 is on the far right side of the axis.
3. Repeat Problem 2 using the data below for Qualcomm Inc. However, this time you should create a copy of your worksheet to use as a template. Replace the data for Chevron with that of Qualcomm.

FISCAL YEAR	2017	2016	2015	2014	2013
TOTAL REVENUE	10,991	10,416	11,142	8,871	7,526
NET INCOME	3,247	1,592	3,160	3,303	2,470

- a) Do you think that Qualcomm can maintain the current growth rates of sales and net income over the long run? Why or why not?
- b) Which company was more profitable in 2010? Which was more profitable if you take a longer view? Would this affect your desire to invest in one company over the other?
4. Using the data for Paychex, Inc. (Nasdaq: PAYX), presented below:

FISCAL YEAR	2017	2016	2015	2014	2013
SALES	\$ 2000.82	\$ 2082.76	\$ 2066.32	\$ 1886.96	\$ 1674.60
EBIT	729.31	812.08	854.82	743.27	674.77
TOTAL NET INCOME	477.00	533.54	576.14	515.45	464.91

DIVIDENDS PER SHARE	1.24	1.24	1.22	1.02	0.69
BASIC EPS FROM TOTAL OPERATIONS	1.32	1.48	1.56	1.35	1.23
TOTAL ASSETS	5,226.30	5,127.42	5,309.79	6,246.52	5,549.30
ACCOUNTS PAYABLE	37.3	37.33	40.25	46.96	46.67
TOTAL LIABILITIES	3,824.32	3,785.94	4,113.15	4,294.27	3,894.46
RETAINED EARNINGS	856.29	829.50	745.35	1,595.10	1,380.97
NET CASH FROM OPERATING ACTIVITIES	610.92	688.77	724.67	631.23	569.23

- a) Calculate the ratio of each year's data to the previous year for each of the above items for Paychex, Inc. For example, for the year 2010, the ratio for sales is $\$2,000.82 / \$2,082.76 = 0.9607$.
- b) From your calculations in part a, calculate each year's rate of growth. Using the example in part a, the ratio is 0.9607, so the percentage growth in sales for 2010 is $0.9607 - 1$ or -3.93% .
- c) Calculate the average growth rate (using the **AVERAGE** function) of each of the above items using the results you calculated in part b. These averages are arithmetic averages.
- d) Use the **GEOMEAN** function to estimate the compound annual average growth rate (CAGR) for each of the above items using the results that you calculated in part a. Be sure to subtract 1 from the result of the **GEOMEAN** function to arrive at a percent change. These averages are geometric averages.
- e) Compare the results from part c (arithmetic averages using the **AVERAGE** function) to those for part d (geometric averages using the **GEOMEAN** function) for each item. Is it true that the arithmetic average growth rate is always greater than or equal to the geometric average (CAGR)?
- f) Contrast the results for the geometric averages to those for the arithmetic average for the

variables listed below. What do you observe about the differences in the two growth estimates for Sale and Accounts Payable? What do you observe about the differences in the two estimates for Total Assets and Retained Earnings? Hint: Look at the results from part b (the individual yearly growth rates) for each variable to draw some conclusions about the variation between the arithmetic and geometric averages.

1. Sales
2. EBIT
3. Total Assets
4. Accounts Payable
5. Retained Earnings

5. Cash budget using WhatIf Analysis

6. Using Goal Seek to calculate Break Even Points

7. Sensitivity analysis of Capital Budgeting – Scenario Analysis, NPV Profile Charts

8. Financial Forecasting- Income Statement, Assets and Liabilities on Balance Sheet

9. Analysing Datasets with Tables and Pivot Tables

Course Designers

1. Mrs. S. Deepika
2. Dr. M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA18C03	C++	CORE	86	4	-	5

Preamble

- To understand the concepts of object oriented programming.
- To develop programming skills in C++ language.

Course Outcomes

On the successful completion of the course, students will be able to

COS Number	CO Statement	Knowledge Level
CO1	Explain the concepts of Object Oriented Programming in C++	K1, K2
CO2	Summarize the functions and operators used in C++	K2
CO3	Develop program involving classes and objects & other concepts.	K3

Mapping with Programme Outcomes

COs	PO1	PO	PO3	PO4	PO5
CO1	S	S	S	S	M

CO2	S	S	S	S	M
CO3	S	S	S	S	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(14 Hrs)

Principles of Object Oriented Programming – A Look at Procedure and Object Oriented Programming Paradigm – Basic Concepts of Objects Oriented Programming – Benefits of OOP – Object Oriented Languages – Application of OOP – Beginning with C++ – What is C++ – Application of C++ – C++ Statements – Structure of C++ Program.

Unit II

(14 Hrs)

Tokens, Expressions and Control Structures – Tokens – Keywords – Identifiers – Basic and User Defined Data Types – Operators in C++ – Operator Overloading – Operator Precedence – Control Structures. Functions in C++ – The Main Function – Function Prototyping – Call by Reference – Return by Reference – Inline Functions. Function overloading – friend and virtual functions.

Unit III

(15 Hrs)

Classes and Objects – Introduction – Specifying A Class – Defining A Member Function – Static Data Members – Arrays of Objects – Objects as Function Arguments – Friendly Function – Pointers to Members. Constructors and Destructors – Constructors – Copy Constructors – Dynamic Constructors – Destructors.

Unit IV

(14 Hrs)

Operator Overloading – Type Conversions – Introduction – Defining Operator Overloading – Overloading : Unary and Binary Operators – Overloading Binary Operators Using Friends – Manipulation of String Using Operators – Rules for Overloading Operators – Types Conversions – Inheritance – Extending Classes – Defining Derived Classes – Single, Multilevel, Multiple, Hierarchical and Hybrid Inheritance – Virtual Base Classes – Abstract Classes.

Unit V

(14 Hrs)

Pointers, Virtual Functions and Polymorphism – Pointers to Objects – Pointers to Derived Classes – Virtual Functions. Working With Files – Classes For File Stream Operations – Opening and Closing of a File – File Pointers and their Manipulation – Sequential I/O Operations.

Text Book:

S.No	Author	Title of the Book	Publisher	Year & Edition
1.	Balaguruswamy.E	Object Oriented Programming with C++	Tata McGraw Hill Publishing Co. Ltd	4 th Edition, Reprint 2009

Books for Reference:

S.No	Author	Title of the Book	Publisher	Year & Edition
1.	Ravichandran.D	Programming with C++	Tata McGraw Hill Publishing Co. Ltd	5 th Edition Reprint 2009
2.	Venugopal K.R., Rajkumar,Ravishankar T.	Mastering C++	Tata McGraw Hill Publishing Co. Ltd	2 nd Edition Reprint 2008

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

- S. Deepika
- M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA18CP2	COMPUTER APPLICATION PRACTICAL II - C++	PRACTICAL	57	-	3	2

Preamble

- To inculcate C++ programming ability among the students.
- To provide knowledge about the implementation of C++ concepts in to programming

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Demonstrate C++ Programming Structure	K1, K2
CO2.	Apply operators and functions of C++	K3
CO3.	Illustrate the object oriented concept in programming	K2

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	S	M
CO2.	S	S	S	S	M
CO3.	S	S	S	S	M

S- Strong; M-Medium; L-Low

Syllabus

- Odd and Even series
- Maximum and Minimum Numbers
- Arithmetic operations using member functions
- Students details
- Details of manager using array of objects
- Computation of mean values using friend function
- Swapping of two values using friend function

8. Static Member function using static data member
9. Sum of two complex numbers using constructors
10. String Manipulation using dynamic constructors
11. Destroy the object using Destructors
12. Simple and compound interest using Single Inheritance
13. Calculation of Depreciation
14. Hybrid Inheritance
15. Virtual Functions

Pedagogy

Demonstration through System, Demonstration through PPT

Course Designers

1. Mrs. S. Deepika
2. Dr. M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19C04	BUSINESS DATA MINING	Theory	86	4	-	5

Preamble

- To understand data mining techniques and algorithm in business analytics.
- To apply data pre-processing techniques and tools to solve business problems.
- No prerequisite required

Prerequisite

- No prerequisite required.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify the data model and its operation	K1
CO2	Classify the basic concepts and techniques of Data Mining	K2
CO3	Apply data mining tool for solving practical business problem	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	L	M	M
CO2	M	S	M	L	L
CO3	M	M	S	S	L

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(17 Hrs)

Data Warehousing - Operational Database Systems vs. Data Warehouses - Multidimensional Data Model - Schemas for Multidimensional Databases – OLAP Operations – Data Warehouse Architecture– Indexing – OLAP queries & Tools. Datamining & Data Preprocessing-Introduction to KDD process – Knowledge Discovery from Databases - Need for Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

Unit II

(17 Hrs)

Association Rule Mining: Introduction - Data Mining Functionalities - Association Rule Mining - Mining Frequent Item sets with and without Candidate Generation - Mining Various Kinds of Association Rules - Constraint-Based Association Mining. **Data Mining:** Data mining Tasks-Data mining vs KDD-

Issues in data mining, Data Mining metrics, Data mining architecture - Data cleaning- Data transformation- Data reduction - Data mining primitives. **Association Rule Mining:** Introduction - Mining single dimensional Boolean association rules from transactional databases - Mining multi-dimensional association rules.

Unit III

(17 Hrs)

Classification & Prediction: Classification vs. Prediction – Data preparation for Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back Propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

Unit IV

(17 Hrs)

Clustering: Cluster Analysis: - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High- Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis.

Unit V

(18 Hrs)

Data Mining Tool: Introduction to WEKA – Loading the data (Simple) - Filtering attributes (Simple) - Selecting attributes (Intermediate) – Training a classifier (Simple) - Building your own classifier (Advanced) - Tree visualization (Intermediate) - Testing and evaluating your models (Simple) Regression models (Simple) - Association rules (Intermediate) - Clustering (Simple) - Reusing models (Intermediate) - Data mining in direct marketing (Simple) - Using Weka for stock value forecasting (Advanced).

Text Book

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1.	Jiawei Han and Micheline Kamber Unit: I - IV	Data Mining: Concepts and Techniques	Morgan Kaufman	2011, 3 rd Edition
2	Bostjan Kaluza Unit: V	Instant Weka How-to	PACKT Publishing	2013, Edition.

Reference Book

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1	Ian H. Witten and Eibe Frank	Data Mining: Practical Machine Learning Tools and Techniques	Morgan Kaufmann publications	2016, 4 th edition
2	M. H. Dunham	Data Mining: Introductory and Advanced Topics	Imprint Pearson Education	2011, 4 th Impression
3	Arun K. Pujari	Data Mining Techniques	Universities Press (India) Pvt. Ltd.	2013, Kindle Edition

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

1. Mrs. S. Deepika
2. Dr.M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19C05	SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	Theory	86	4	-	4

Preamble

- To familiarize the fundamental concept of Securities and Portfolio Management
- To provide knowledge of risk and return involved in the different types of Securities

Prerequisite

- No prerequisite required

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the concept of security market and Portfolio management	K1
CO2	Classify and interpret the various types of security market	K2
CO3	Calculate and compute security value and application of portfolio techniques	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	S	S
CO2	S	M	M	M	S
CO3	S	M	L	S	S

S- Strong; M-Medium; L-Low

Syllabus

Unit I (17Hrs)

Nature and scope of Investment management: Investment speculation and Gambling- Factors favorable for investment–Investment Media–Features of an investment Programme –The investment Process–Stages in Investment–Structure of Financial Markets-DEMAT-ing –Functions.

Unit II (18 Hrs)

Security Valuation: Elements of Investment–Approaches to Investment–Historical Developments of Investment Management–Basic Valuation Models–Bonds, Preference Shares, Common Stock. Returns: Measurement–Traditional Technique-Holding Period– Yield–Probability Distributions–Statistical Methods. Risk: Risk Classification–Systematic, Unsystematic Risk Measurement–Standard Deviation and Variance–Regression Equation– Correlation Coefficient– Co-variance–Investor’s Attitude towards Return and Risk.

Unit III (17 Hrs)

Fundamental Analysis: Economic Analysis–Industrial Analysis–Company Analysis. Technical Analysis: Assumptions–Dow Theory Charts and Signals–Technical Indicators. Efficient Market Theory: Weak Form–Semi-Strong Form–Strong Form of Market– Experiments and Analysis of Theory. Comparisons with Fundamental and Technical Analysis.

Unit IV (17 Hrs)

Portfolio Analysis: Traditional Vs. Portfolio Analysis–Markowitz Theory–Efficient Frontier – Sharp ideal Index – Foreign Security Investment – Affecting the India Investor – Opportunities. Portfolio Selection and International Diversification: Types of Investors – Finding Cut off Rate – Internal Diversification.

Unit V (17 Hrs)

Techniques of Portfolio Revision: Formula Plans – Constant Rupee Value – Constant Ratio – Variable Ratio – Rupee Cost Averaging. Classification of Investment Companies - Management Performance evaluation – Sharp’s Index – Treynor’s Index – Jensen’s Index – Empirical Tests.

Distribution of Marks: Theory 75% Problems 25%

Text Book

S.No	Author Name	Title of the Book	Publisher	Year and edition
1	Preeti Singh	Investment Management	Himalaya Publishing house	2011, 1 st Edition

Reference Books

S.No	Author Name	Title of the Book	Publisher	Year and edition
1	Punithavathy Pandian	Security Analysis and Portfolio Management	Vikas Publishing House Pvt. Ltd.	2012, 2 nd Edition
2	Francis	Investments	S.Chand & co	2015, 5 th Edition
3	Bhalla.V.K	Investment Management	S Chand & Co	2010, 10 th Edition

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designer

- Mrs. M. Uma
- Mrs. R. Shiji

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19C06	DATABASE PROGRAMING	Theory	71	4	-	4

Preamble

- To provide comprehensive knowledge about relational and NoSQL database management system

Prerequisite

- No prerequisite required

Course Outcomes

- On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Interpret relational database management concepts	K1
CO2	Develop the tables using normalization	K2
CO3	Illustrate SQL operators and keys	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	S	S	S	S
CO3	M	S	S	S	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(15 Hrs)

Introduction to database management System-Data Models-Database system architecture-The SQL Language-Relational Database Management System-Candidate key, primary tables key, Foreign Key-Relational Operators-Attribute domains and their Implementations-New conventions for Database Object-Structure of SQL statements and SQL writing Guidelines-Creating Tables-Describing the structure of a Table-Populating tables.

Unit II

(14 Hrs)

Functional Dependencies-Normalization process: 1NF- 2NF-3NF-BCNF. The E-R Model-Entities and Attributes-Relationships-Normalizing the Model-Table Instance Charts-Implementation of the selection Operator-Using aliases to control column Headings-Implementation of the projection and join Operators-

Creating foreign keys and primary keys and check constraints-adding and modifying Columns-Removing constraints from a table

Unit III

(14 Hrs)

Built in Functions-Numeric-Character Conversion Functions-Introduction to group functions-sum, avg, max, min, count-combining single value and group functions- Displaying Specific Groups-Introduction to processing date and Time-Arithmetic with Dates-Date Functions-Formatting dates and time. Sub Queries-Correlated Queries-Using sub queries to create, update, insert and delete rows from a Table-Transaction-Commit, rollback, save point and auto Commit-Introduction to PL/SQL-user defined Functions-Triggers-Stored procedures.

Unit IV

(14 Hrs)

Overview and History of NoSQL Databases Definition of the Four Types of NoSQL Database, The Value of Relational Databases, Getting at Persistent Data, Concurrency, Impedance Mismatch, Application and Integration Databases, Attack of the Clusters, The Emergence of NoSQL. Aggregate Data Models: Aggregates - Key-Value and Document Data Models - Column-Family Stores - Summarizing Aggregate-Oriented Databases - More Details on Data Models - Distribution Models - Consistency.

Unit V

(14 Hrs)

Introduction to MongoDB- Getting Started – Querying - Creating, Updating, and Deleting Documents – Querying - Designing Your Application: Indexing - Special Index and Collection Types – Aggregation.

Text Book

S.No	Author Name	Book Name	Publisher	Year and edition
1	Ramon A Mata-Toledo Pauline K Cushman. Unit: 1 -3	Database Management System	Tata McGraw-Hill Publishing company limited, New Delhi.	2010, 2 nd edition
2.	Pramod J. Sadalage & Martin Fowler. Unit: 4	NoSQL Distilled -	Pearson Education, Inc.	2013 Edition
3.	Kristina Chodorow Unit: 5	MongoDB: The definitive guide -	O'Reilly Media, Inc.,	2013, 2 nd Edition

Reference Books

S.No	Author Name	Book Name	Publisher	Year and edition
1	Ramakrishnan & Gehrke	Database Management Systems	Tata Mc Graw Hill	2009, 8 th edition
2	Nilesh Shah	Database Systems using Oracle	PHI learning pvt Ltd	2014, 2 nd edition
3	Alexis Leon & Mathews Leon	Fundamentals of database management systems	Tata Mc Graw Hill	2011, 3 rd edition

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

- S. Deepika
- Dr.M. Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
AF19A01	OPERATIONS AND STRATEGIC MANAGEMENT	Theory	71	4	-	5

Preamble

- To provide an in depth study of the various business process, analyze operations, production planning

Prerequisite

- No prerequisite Knowledge required

Course Outcomes

On the successful completion of the course, students will be able to

COs	CO Statement	Knowledge Level
CO1	To label an in depth study of the various business process, analyze operations, and strategic management.	K1
CO2	Identify and evaluate activities for determination of work centre	K2
CO3	Illustrate production planning and resource management	K2,K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(14 Hrs)

Operations Management – Introduction – Scope characteristics of modern operations functions – recent trends in production / operations management. Operations planning: Demand forecasting – capacity planning - capacity requirement planning - facility location - facility layout – Resource aggregate planning – Material requirements planning – Manufacturing resource planning – Economic Batch quantity.

Unit II

(15 Hrs)

Designing of operational systems and control: Product Design, Process design - Selection - Product Life Cycle – Process Planning – Process Selection. production planning and control: Introduction – Control Measures – Time study, Work study, Method study, Job Evaluation, Job Allocation (Assignment Technique), Scheduling Queuing Models, Simulation and Line Balancing – Optimum Allocation of resources – Lean Operations – JIT – Transportation Model and Linear Programming Technique (Formulation of equations only).

Unit III

(14 Hrs)

Productivity Management and Quality Management: Measurement techniques of productivity index, productivity of employee, productivity of materials, productivity of management resources, productivity of other factors – productivity improving methods – TQM basic tools and certification – ISO standards basics. project Management: Project planning – project life cycle – Gantt charts, PERT and CPM.

Unit IV

(14 Hrs)

Economics of Maintenance and spares Management: Break down Maintenance – Preventive Maintenance – Routine Maintenance – Replacement of Machine – Spare Parts Management. Economics of Maintenance and spares Management: Break down Maintenance – Preventive Maintenance – Routine Maintenance – Replacement of Machine – Spare Parts Management.

Unit V

(14 Hrs)

Strategic Analysis and strategic planning Situational Analysis –SWOT Analysis – Portfolio Analysis – BCG Matrices – Stages in Strategic Planning – Alternatives in Strategic Planning- Formulation and Implementation of strategy: Strategy formulation function wise (Production Strategy, Marketing Strategy, Man Power Strategy) – Structuring of Organisation for implementation of strategy – Strategic Business Unit – Business Process re-engineering.

Sl.No	Author Name	Title of the book	Publisher	Year and edition
1	ICAI Executive Study Material 2016			
2	Richard, B. Chase, F. Robert, Jacobs, Nicholas, J. Aquilano, and Nitin, K. Agarwal	Operations Management for Competitive Advantage	Tata McGraw-Hill Education	Reprint 2014, 11 th Edition

Reference Book

Sl.No	Author Name	Title of the book	Publisher	Year and edition
1	Arunkumar, B.K.Agnihotri	Operation Management and Information system	ShuchitaPrakashan (P) Ltd	2016, 14 th Edition

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designer

- Mrs. S. Manasha
- Mrs. R. Shiji

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19A02	ECONOMETRICS	Theory	71	4	-	5

Preamble

- To introduce microeconomic and macroeconomic concepts.
- To familiarize various economic theories.
- To interpret and examine the monetary and fiscal policy.

Prerequisite

- Basic knowledge in economics.

Course Outcomes

On the successful completion of the course, Students will demonstrate their knowledge of the fundamental and technical concepts of economics and also students will be able to make decisions wisely using cost-benefit analysis.

CO No.	CO Statement	Knowledge Level
CO1	Determine and understand the various laws of economics	K1
CO2	Discriminate different market structure and pricing policy	K2
CO3	Interpret economic theories and policies	K2, K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	L	M	L
CO2	S	S	M	S	S
CO3	S	M	M	M	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(15 Hrs)

Introduction to Economics – Wealth, Welfare and Scarcity Views on Economics - Positive and Normative Economics. Definition – Scope and Importance of Business Economics. Concepts: Production Possibility frontiers – Opportunity Cost – Accounting Profit and Economic Profit – Incremental and Marginal Concepts – Time and Discounting Principles – Concept of Efficiency

Unit II

(14 Hrs)

Demand and Supply Functions: Meaning of Demand – Determinants and Distinctions of demand – Law of Demand – Elasticity of Demand – Demand Forecasting – Supply concept and Equilibrium. Consumer Behaviour: Law of Diminishing Marginal utility – Equi-marginal Utility – Indifference Curve – Definition, Properties and equilibrium

Unit III

(14 Hrs)

Production: Law of Variable Proportion – Laws of Returns to Scale – Producer’s equilibrium – Economies of Scale. Cost Classification – Break Even Analysis. Product Pricing: Price and Output Determination under Perfect Competition, Monopoly – Discriminating monopoly – Monopolistic Competition – Oligopoly – Pricing objectives and Methods

Unit IV

(14 Hrs)

National Income - Gross National Product -Net National Product - Measurement of National Income - Consumptions, savings and investments. Theory of Employment- Type of unemployment- Labour and Population theories- Definition of capital and growth of capital- Steps in capital formation. Money - Definition and functions of money- Quantity theory of money. Public Finance-Direct and indirect taxes - Principle of Taxation-Effect of taxation on production and Distribution-Deficit financing system.

Unit V

(14 Hrs)

Monetary and Fiscal Policies– measures of money stock – policy and money supply – instruments of monetary policy – fiscal policy – the union budget – state budgets – finances of the union and the states – the Finance commission – importance of the budget.

Text Book

Sl. No.	Author Name	Title of the book	Publisher	Year and edition
1	Chaudhary C.M	Business Economics	RBSA Publishers - Jaipur - 03.	2015 Revised Edition
2	Mehta P.L	Managerial Economics–Analysis, Problems & Cases	Sultan Chand & Sons - New Delhi – 02.	2015 Revised Edition

Reference Books

Sl. No.	Author Name	Title of the book	Publisher	Year and edition
1	Francis Cherunilam	Business Environment(Unit V)	Himalaya Publishing House, Mumbai – 04.	2015 Revised Edition
2	Shankaran S	Business Economics (Unit IV)	Margham Publications Ch -17	2015 Revised Edition
3	Sundharam KPM Sundharam E N	Business Economics (Unit I-IV)	Sultan Chand & Sons - New Delhi – 02.	2015 Revised Edition

Pedagogy

- Lecture, PPT, Quiz, Assignment, Seminar.

Course Designers

1. Dr.(Mrs).M. RajaRajeswari
2. Mrs.R. Shiji

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA17CP3	COMPUTER APPLICATION PRACTICAL III – DATABASE PROGRAMMING	Practical	-	3	42	1

Preamble

- To enhance practical knowledge in Database Management using SQL, MongoDB & WEKA

Course Outcomes

On the successful completion of the course, students will be able to analyse the data using query

CO Number	CO Statement	Knowledge Level
CO1	Enumerate and demonstrate the database in SQL, MONGODB, and WEKA.	K1
CO2	Construct data definition and data manipulation languages in SQL	K2
CO3	Understand Mongo as a data store & be comfortable with Mongo's query and update languages	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	S	S	S	L
CO3	S	S	S	S	L

S- Strong; M-Medium; L-Low

Syllabus

1. Normalize the following dataset:
 - a) Employee database
 - b) Students database
 - c) Hospital database
2. Data Definition Language and Data Manipulation Language

Table: Student

Regno number (5) primary key
 Studname varchar2 (15)
 Gender char (6)
 Deptname char (15)
 Address char (25)
 Percentage number (4, 2)

Queries:

 - a) To create a table, describe a table, alter a table, drop a table, and truncate a table
 - b) To insert values, retrieve records, update records, delete records
3. Create an Employee table with following field.

Eno number (5) primary key
 Ename varchar2 (20) not null
 Deptno number (2) not null
 Desig char (10) not null
 Sal number (9, 2) not null
 Comm. Number (7, 2) null

Queries:

 - a) Insert values and display the records
 - b) Display sum, maximum amount of basic pay
 - c) List the name of the clerks working in the department 20
 - d) Display name that begins with 'G'
 - e) List the names having 'I' as the second character
 - f) List the names of employees whose designation are 'Analyst' and 'Salesman'
 - g) List the different designation available in the Employee table without duplication (distinct)
4. Create a student table with the following fields

Stuno number (5) primary key
 Stunm Varchar2 (20)
 Age number (2)
 Mark1 number (3)
 Mark2 number (3)

Mark3 number (3)

Queries:

- a) Insert values and display the records
- b) List the names and age of the student whose age is more than 12
- c) Display total and average of marks
- d) Display the names of the maximum total & minimum total student
- e) List the names of the student that ends with 'A'
- f) List the names of student whose names have exactly 5 characters

5. Create the table PAYROLL with the following fields and insert the values:

Emplno	number (8)
Emplname	varchar2 (8)
Dept	varchar2 (10)
Baspay	number (8, 2)
HRA	number (6, 2)
DA	number (6, 2)
Pf	number (6, 2)
Netpay	number (8, 2)

Queries:

- a) Update the records to calculate the net pay.
- b) Arrange the records of the employees in ascending order of their net pay.
- c) Display the details of the employees whose department is "Sales".
- d) Select the details of employees whose $HRA \geq 1000$ and $DA \leq 900$.
- e) Select the records in descending order.

6. Create a Table Publisher and Book with the following fields:

Table: publisher

Pubcode	Varchar2 (5)
Pubname	Varchar2 (10)
Pubcity	Varchar2 (12)
PubState	Varchar2 (10)
Bookcode	Varchar2 (5)

Table: Book

Booktitle	Varchar2 (15)
Bookcode	Varchar2 (5)
Bookprice	Varchar2 (5)

Queries:

- a) Insert the records into the table publisher and book.
- b) Describe the structure of the tables.
- c) Show the details of the book with the title "DBMS".
- d) Show the details of the book with $price > 300$.
- e) Show the details of the book with publisher name "Kalyani".
- f) Select the book code, book title; publisher city is "Delhi".
- g) Select the book code, book title and sort by book price.
- h) Count the number of books of publisher starts with "Sultan chand".
- i) Find the name of the publisher starting with "S".

7. Create Orders table and customers table with following fields:

Table: order

Orderid	number (10)
Customerid	number (5)
Orderdate	date

Table: customers

Customerid	number (5)
Custname	varchar2 (10)
Contactname	varchar2 (10)

Country varchar2 (10)

- a) Perform INNER JOIN, that selects records that have matching values in both tables
- b) Perform LEFT JOIN, that selects records that have matching values in both tables
- c) Perform RIGHT JOIN, that selects records that have matching values in both tables

8. Create Customer Table and supplier table with following fields:

Table: Customer

cusid number (10)
FirstName varchar2 (10)
LastName varchar2 (10)
City varchar2 (10)
Country varchar2 (10)
Phone number (10)

Table: Supplier

Supid number (10)
CompanyName varchar2 (10)
ContactName varchar2 (10)
City varchar2 (10)
Country varchar2 (10)
Phone number (10)
Fax number (10)

- a) Insert the records into the table customer and supplier.
- b) Describe the structure of the tables.
- c) List details of customer table and supplier table.
- d) Perform full outer join from customer on supplier table order by country

MONGODB:

- 9. Create a Student Database in MongoDB using “use” Command.
- 10. Create program using crud operation using MongoDB.
- 11. Create program text search and indexes using MongoDB.
- 12. Create the replica set in the mongo shell and test the configuration

WEKA:

- 13. Demonstration of preprocessing on dataset student.arff
- 14. Demonstration of classification rule process on dataset employee.arff using id3 algorithm
- 15. Demonstration of clustering rule process on dataset student.arff using simple k-means
- 16. Demonstration of preprocessing on dataset labor.arff

Course Designers

- 1.S. Deepika
- 2. Dr.M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19C07	R PROGRAMMING	Theory	71	4	-	5

Preamble

- To introduce R Programming concepts and to develop programming skills in R Programming

Prerequisite

- No prerequisite required.

Course Outcomes

On the successful completion of the course, students will be able to

CO No.	CO Statement	Knowledge Level
CO1	Relate R Programming concepts with Datasets	K1
CO2	Demonstrate data frames to perform data manipulations	K2
CO3	Experiment with various quantitative analysis techniques	K3

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	M	S	S	M
CO3	M	S	S	M	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I (14 Hrs)

An overview of R: Introduction to R expressions, variables, and functions-Vectors: Grouping values into vectors, then doing arithmetic and graphs with them- Matrices: Creating and graphing two-dimensional data sets- Calculating and plotting some basic statistics: mean, median, and standard deviation- Factors: Creating and plotting categorized data.

Unit II (15 Hrs)

Data Frames: Organizing values into data frames, loading frames from files and merging them- Working With Real-World Data: Testing for correlation between data sets, linear models and installing additional packages.

Unit III (14 Hrs)

Data manipulations: Overview of how to connect database from R-How to run SQL queries from R to fetch data- Data manipulation using SQL to prepare data for analysis.

Unit IV (14 Hrs)

Reading and writing of csv file- Importing and exporting of data Set-Merging of file having same or different number of Column-Reading a file involving date and converting this date into different Format-Plotting two series on one graph-one with a left y axis and another with a right y Axis-Histogram-Multivariate Statistical Techniques like Discriminant Analysis, Factor Analysis.

Unit V (14 Hrs)

Formula notation and complex statistics: Analysis of Variance (ANOVA) - Manipulating Data and Extracting Components: Creating data for complex analysis – summarizing data Regression – Simple Linear Regression – Multiple Regression – Curvilinear Regression.

Text Books:

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1.	Study Material prepared by the department - Unit 1,2,3,4			
2.	Beginning R: The Statistical Programming Language(Wrox) Unit - V	Dr. Mark Gardener	John Wiley & Sons, Inc.,	2016 revised edition

Books for Reference:

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1.	The Art of R Programming	Norman Matloff	No Starch Press	2011 edition
2.	The R Book	Michael J. Crawle	Wiley	2008 edition
3.	Statistical Analysis with R.	M. John	Tata McGraw Hill Publishing Co. Ltd	October 2010, edition
4.	Learning R	Richard Cotton	O'Reilly Media	September 2013, edition

5.	Unit 1,3,4 – Tutorial point, Unit 2 – Code School
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Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

- Dr. M. Rajeswari
- S. Deepika

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19C08	BUSINESS INTELLIGENCE	Theory	71	4	-	4

Preamble

- To equip knowledge on technical components of Business Intelligence

Prerequisite

- Basic knowledge in business operations

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Relate the marketing activities with theoretical marketing concepts	K1
CO2	Recognize the marketing strategies, quantitative analysis and optimization technique	K2
CO3	Identify various modern marketing techniques & problem solving techniques	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	L
CO2	S	M	S	S	S
CO3	S	M	M	M	S

S- Strong; M-Medium; L-Low

Syllabus

Unit I (14 Hrs)

Introduction to Business Intelligence: Framework for Business Intelligence–Intelligence Creation–Transaction Processing Versus Analytic Processing–Major Tools and Techniques of BI.

Unit II (15 Hrs)

Business Performance Management – Strategize–Plan–Monitor–Performance Measurement–BPM Methodologies–Performance Dashboards and Scorecards.

Unit III (14 Hrs)

Text and web mining – text mining concepts and definitions – natural language processing – text mining applications – text mining process – text mining tools – web mining overview – web content mining and web structure mining – web usage mining – web mining success stories

Unit IV (14 Hrs)

Business Intelligence Implementation: Integration and Emerging Trends– Implement BI–BI and Integration implementation –Connecting BI systems to Databases and other enterprise systems

Unit V (14 Hrs)

On-Demand BI–Issues of Legality, Privacy and Ethics–Emerging Topics in BI – the web2.0 revolution – online social networking – virtual worlds – social networks and BI: collaborative decision making – RFID and new BI application opportunities – reality mining

Text Book

Sl.No.	Author Name	Title of the book	Publisher	Year and edition
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1	Efraim Turban Ramesh Sharda Dursun Delen David King	Business Intelligence - A Managerial Approach	Pearson	2012, 2 nd Edition
2	Stuart Russel and Peter Norvig	Artificial Intelligence: A Modern Approach	Prentice Hall	2009, 3 rd edition

Pedagogy

Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

1. S.Deepika
2. Dr.M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
CM19C09	PRINCIPLES OF FINANCIAL MANAGEMENT	Theory	86	4	-	4

Preamble

- To familiarize the students with the principles and practices of financial management.
- To understand the concepts of Financial Management and their application for managerial decision making.

Prerequisite

- No prerequisite required

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define and identify the concepts of Financial Management	K1
CO2	Understand Capital Structure, Cost of Capital for strategic Financial Decision Making	K2
CO3	Apply and practice the Theories for financial planning	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	M	S	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(17 Hrs)

Business Finance – Meaning, Definition, Scope, Importance, Finance Functions, Fixed and variable objectives of Financial Management – Factors influencing Financial Decisions – Source of Capital – Financial Planning – Capitalization – Time Value of Money.

Unit II

(17 Hrs)

Capital Structure – Introduction – Importance – Financial Break Even Point – Point of Indifference – Optimal Capital Structure – Risk Return Trade off - Theories of Capital Structure, NI, NOI, MM, Arbitrage process – Factors Determining Capital Structure – Capital Gearing. Leverage – Meaning, Types, Impacts, Significance and Limitation.

Unit III

(17 Hrs)

Cost of Capital – Meaning – Significance – Classification of cost – Computation of cost of capital – Cost of debt, Preference, Equity and Weighted Average Cost of Capital. Capital Budgeting – Meaning – Need – Importance – Kinds and process of Capital Budgeting Techniques of Appraisal of Investment Proposal.

Unit IV

(18 Hrs)

Working Capital Management – Meaning, Concepts, Classification, Importance, Objects of working Capital – Factors determining the Working Capital Requirements – Management of working capital – Methods of Estimating Working Capital Requirements. Cash Management – Determining optimum cash balance.

Unit V

(17 Hrs)

*Receivables Management – Forming of credit policy. Inventory Management – Tools and Techniques of Inventory Management. *

Dividend Policy - Factors Affecting Dividend – Types of Dividend – Advantages and disadvantages of stable dividend policy – Theory of Relevance and Irrelevance – Bonus Issue – Rights Issue.

*Theory Only

Distribution of marks Theory 40% Problems 60%.

Text Book

Sl.No.	Author name	Title of the book	Publisher	Year &Edition
1	Shashi .K.Gupta Sharma R.K	Financial Management	Kalyani Publishers	2015

Reference Books

Sl.No.	Author name	Title of the book	Publisher	Year &Edition
1	Ravi.M.Kishore	Financial Management - Problems and solutions	Taxmann Publications Pvt Ltd	2017 Edition
2	Khan&Jain	Financial Management	Tata McGraw Hill	2018
3	Maheshwari S.N	Financial Management	Sultan Chand & Sons	15 th edition 2019

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

- Dr. B. Thulasipriya, Department of Commerce
- Dr.D. Vijayalakshmi, Department of Commerce

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19A03	BUSINESS MANAGEMENT AND ETHICS	Theory	71	4	-	5

Preamble

- To gain basic knowledge in the principles of management.

Prerequisite

- No prerequisite required

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Relate the basic concepts of management and ethics	K1

CO2	Demonstrate the principles of management and ethics	K2
CO3	Apply management principles and ethics in managerial environment	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	L	M	M
CO2	S	S	S	L	L
CO3	S	S	S	S	S

S- Strong; M-Medium; L-Low

Unit I

(15 Hrs)

Management– Definition-Nature and Scope-Functions-Contributions by Henry Fayol, FW Taylor, Peter F Drucker, McGregor-Management as a Science, Art, Profession- Management and Administration - Principles of Management – Planning-Meaning – Nature – Importance- purpose of planning-planning process - Methods and Types of Plans- Advantages and Limitations

Unit II

(14 Hrs)

Decision Making- Steps in Decision Making. Organization – Meaning- Nature and Importance- Process of Organization – Structure- Departmentation – Delegation – Centralization – Decentralization – Authority- Responsibility Relationship-Line, Line & Staff – Functional- Span of Control - Charts and Manuals - MBO & MBE – Group Dynamics and Organizational Climate

Unit III

(14 Hrs)

Leadership – Meaning – Importance-Functions of Leadership-Leadership Styles-Qualities of A Good Leader – Motivation – Meaning-Need for Motivation-Theories of Motivation- Maslow, X, Y, Z Theory, Hygiene Theory.

Unit IV

(14 Hrs)

Coordination – Meaning – Definition – Principles-Advantages and Disadvantages – Control –Meaning – Importance- Process & Techniques of Control.

Unit V

(14 Hrs)

Business Ethics: Ethics – Meaning, Importance, Nature and Relevance – Values and Attitudes of Professional Accountants - Seven Principles of Public – Ethics in Business.

Text Books

Sl.No.	Author Name	Title of the book	Publisher	Year and edition
1	DinkarPagre	Principles of Management(Unit I – III)	Sultan Chand & Sons, New Delhi	2009,5th edition
2	Rajendra Pal &Korlahalli J.S	Essentials of Business Communication(Unit IV ,V)	Sultan Chand & Sons, New Delhi	2008,11th edition

Reference Books

Sl.No.	Author Name	Title of the book	Publisher	Year and edition
1	Bhushan Y.K	Business Organization and Management	Sultan Chand & Sons	2009,5th edition
2	JainV.K Omprakash Biyani	Business Communication	Sultan Chand & Company Ltd, New Delhi	2009,1 st edition
3	Koontz and O'Donnel	Principles of Management	TataMcGraw Hill	2009,6 th edition
4	Pillai R.S.N &Bagavathi	Modern Commercial Correspondence	Sultan Chand & Co Ltd, New Delhi	2008, 3 rd edition

Course Designers

1. Mrs.M. RajaRajeswari
2. Mrs. D. Sujini

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
AF19A04	PRINCIPLES OF MARKETING	Theory	71	4	-	5

Preamble

- To emphasize on the importance of marketing as a strategy for market segmentation and for establishing a market share
- To highlight the role of advertising and personal selling for increased turnover and profitability

Prerequisite

- No prerequisite Knowledge required

Course Outcomes

On the successful completion of the course, students will be able to

CO.NO	CO Statement	Knowledge Level
CO1	Describe the Objectives, Functions of Market and Marketing	K1
CO2	Interpret about Marketing Mix and Consumer behavior	K2
CO3	Experiment the Consumerism & New approaches in marketing	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	S	S	S	M
CO3	S	S	S	S	M

S- Strong; M-Medium; L-Low

Syllabus

Unit I

(14Hrs)

Marketing-Definition of Market & Marketing-Classifications of Markets-Marketing & Selling-Objectives & Importance of Marketing – Modern Marketing Concept.

Unit II

(14Hrs)

Marketing Functions-Marketing Process-Classification-Functions of Exchange-Physical Supply-Facilitating Functions-Standardization and Grading -AGMARK-BIS/ISI

Unit III

(15Hrs)

Market Mix-Product Mix- Price mix-Market Segmentation-Promotion Mix-Advertising and Personal Selling-Physical Distribution Mix-Functions-Types of Middlemen

Unit IV

(14Hrs)

Consumer Behavior-Meaning- Need for Studying Consumer Behavior- Factors Influencing Consumer Behavior- Buyers Decision Making Process.

Unit V

(14Hrs)

Consumerism-Need for Consumer Protection-Consumer Protection Act-Features-Competition Act-Commission Act-RTI Act- Unfair and Restricted Trade Practices-New Approaches in Marketing-Web-Based Marketing-E-Marketing-E-Retailing- Multi Level Marketing- Tele Marketing – Plano gram.

Text Book

Sl.No.	Author Name	Title of the book	Publisher	Year and edition
1	Rajan N, Nair, Sanjith, Nair R	Marketing	Sultan Chand &sons	2012 7 th edition

Reference Books

Sl.No.	Author Name	Title of the book	Publisher	Year and edition
1	Chandrasekaran K.S	Marketing Management	The McGraw Hill companies	2010 , 1 st edition

2	Pillai R.S.N and Bhagavathi	Modern Marketing Principles and Practice	Sultan Chand, New Delhi	2010, 14 th edition
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Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

Course Designers

- Mrs. D. Sujini
- Mrs. S. Manasha

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA17CP4	Computer Application Practical IV –Analysis with SPSS &R	Practical	-	3	57	3

Preamble

- To explore and acquire skills in SPSS and R Programming

Prerequisite

- Basic knowledge of Computers

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamental programming concepts of R	K1
CO2	Application of SPSS and R Statistical tools to problems	K2
CO3	Relate analysis techniques to data sets	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	L	M	M
CO2	S	M	M	S	M
CO3	S	M	L	M	S

S- Strong; M-Medium; L-Low

Syllabus

- Find Factorial of a number using recursion
 - Write program to calculate Multiplication Table using R
 - Check if a Number is Positive, Negative or Zero
 - Creating vector and matrices using R program.
 - Import and Visualize data using scatter plots
 - Logical statements, cbind/rbind command in R and Create dataset using dataframes and factors and plot a graph.
- R and SPSS**
- Create an SPSS and R Dataset and determine the number of 18-22-year-old population in 2000, 2004 and 2005

PARTICULARS	2000	2004	2005
UNIVERSITY STUDENT	47498	66309	70153
NUMBER OF TEACHERS	17302	19103	18098
NUMBER OF INSTITUTIONS	77	91	90

NUMBER OF STUDENTS IN THE % OF THE 18-22 YEAR-OLD POPULATION	10.4	13.9	15
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8) The data below are about the number of tourists in Hungary between 1988 and 1994.

Year	Quarters	Number of tourists (thousand persons)	Year	Quarters	Number of tourists (thousand persons)
1988	1	687.5	1990	4	1061.2
1988	2	944.7	1991	1	839
1988	3	1212.8	1991	2	1446
1988	4	999.4	1991	3	2274.7
1989	1	839.8	1991	4	1281.5
1989	2	1126.6	1992	1	868.1
1989	3	1423.4	1992	2	1374
1989	4	1164.8	1992	3	1823.9
1990	1	896.2	1992	4	1319.3
1990	2	1307.8	1993	1	854
1990	3	1887.8			

- Is there any trend in this model? (Normality test)
 - Create a graph from the time series!
 - Which seasonal decomposition should you use? Why?
 - Do a seasonal decomposition! Analyze the parameters and the seasonal factors!
 - Create graphs from the seasonal factors (saf_1, sas_1, stc_1)!
 - Determine the number of tourists for the 2nd, 3rd and 4th quarter of 1993!
- 9) Open the Employee_data.sav file! and analyse the following in SPSS and R

Transform / Select Data

- What is the proportion of custodial?
- What is the proportion of women within managers?

Graphs

Create a column diagram about the proportion of employees grouped by gender!

Embellish the graph! Put the value of proportions into the chart!

- Transform this column diagram into a pie chart!
- Create a scatter plot about month since hire and beginning salary if you set markers by gender! Embellish the graph!
- Create a scatter plot about month since hire and previous experience if you set markers by employment category! Embellish the graph!
- Define simple box plot about previous experience! Embellish the graph!
- Define simple box plot about the month since hire categorized by the employment category! Embellish the graph!
- Define box plot about the previous experience categorized by the employment category clustered by gender! Embellish the graph!
- Create a graph to test the normal distribution of beginning salary!

Central Tendencies, Measures of Distribution, Measures of Asymmetry

- Define the central tendencies of month since hire!
- Define the characteristics of distribution of previous experience!
- What is the average salary of employees belonging to the minority?

Correlation and Linear Regression

Is there any relation between previous experience and month since hire?

- Determine a linear relation between the month since hire and previous experience of employees!
- Define a 90% confidence interval for its b0 and b1 parameters!
- Define a 90% confidence interval for the y variable!

E) Open the Cars.sav file!

Transform / Select Data

- a) How old are the cars? Create a new variable as age!
- b) What is the ratio of American, European and Japanese cars within cars with higher consumption than 20 miles per gallon?
- c) What is the ratio of those American cars which have 4-6-8 cylinders?

10. Estimation and Hypothesis Testing

- a) Define a 95% confidence interval for the vehicle weight!
- b) Define a 90% confidence interval for the horsepower!
- c) Define a 98% confidence interval for the time to accelerate!
- d) Test the hypothesis that the average consumption of cars is 20 miles per gallon! ($\alpha = 5\%$)
- e) Use One Sample T Test to determine whether or not the average miles per gallon significantly differ from 24 at 10% significance level!
- f) Test the hypothesis that the average horsepower of cars is 100! ($\alpha = 5\%$)
- g) Test the hypothesis that the average consumption of Japanese and American cars is the same! ($\alpha = 5\%$)
- h) Test the hypothesis that the average consumption of European and American cars is the same! ($\alpha = 10\%$)
- i) Check if the horsepower follows a normal distribution or not!

Statistical Dependence

- a) Create a crosstab from the model year and the country of origin!
- b) Create a crosstab from the number of cylinders and the country of origin!
- c) Is there any relationship between the country of origin and engine displacement?
- d) Is there any relationship between the country of origin and horsepower?
- e) Is there any relationship between the country of origin and vehicle weight?

Pedagogy

- Demonstration through System, Demonstration through PPT

Course Designers

- 1. Dr.M.Rajeswari
- 2. Mrs. S. Deepika

SKILL BASED SUBJECT

Sem	Sub code	Title of paper	Hrs/w week	Durat ion	CIA	ES E	Total	Cre dits
III & IV	DA19TA01	Technological Analytics - Java & Linux Fundamentals	2	2	25	75	100	4
III & IV	DA19TAP1	Technological Analytics - Java & Linux Fundamentals	1	2	40	60	100	2

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19TA01	TECHNOLOGICAL ANALYTICS – Java & Linux Fundamentals	Theory	56	4	-	4

Preamble

- To explore and acquire skills in Java and Linux Programming

Prerequisite

- Basic knowledge of Computers

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamental programming concepts of Java	K1
CO2	Clear Knowledge on Linux	K2
CO3	Relate analysis techniques to data sets	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	L	M	M
CO2	S	M	M	S	M
CO3	S	M	L	M	S

S- Strong; M-Medium; L-Low

Syllabus

Unit I(12Hrs)

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting. **Operators** : Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation. If statement, if...else... statement, Nesting of if...else... statements, else...if Ladder, Switch, ? operators, **Loops** – While, Do, For, Jumps in Loops, Labeled Loops.

Unit II (12Hrs)

Defining a Class, Adding Variables and Methods, Creating Objects, Accessing ClassMembers, Constructors, Methods Overloading, Static Members, Nesting of Methods. **Inheritance**: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control.

Unit III(12 Hrs)

Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, Adding a Class to a Package, Hiding Classes.

Unit IV(11 Hrs)

Packages - Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

UNIT V(11 Hrs)

Linux Basics: Introduction to Linux, **Managing Files and Directories**: File System of the Linux, File Compression and Archiving. **Managing Directories**: Creating Directories, Deleting Directories, Dot Directories. General usage of Linux kernel & basic commands: Shell Prompt Terms, Opening and using a Shell Prompt, pwd, ls, cp, mv, head Command, tail Command, cat, grep, chmod

TEXT BOOKS:

1. E. Balaguruswamy, “**Programming In Java**”, 2nd Edition, TMH Publications ISBN
2. Red Hat Enterprise Linux 4: System Administration Guide Copyright, 2005 Red Hat, Inc

& REFERENCE BOOKS:

1. Peter Norton, “**Peter Norton Guide To Java Programming**”, Techmedia Publications

Course Designers

1. S. Deepika
2. Dr.M.Rajeswari

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA19TAP1	TECHNOLOGICAL ANALYTICS – Java & Linux Fundamentals	SBS - Practical	28	-	2	2

Preamble

- To explore and acquire skills in Java and Linux Programming

Prerequisite

- Basic knowledge of Computers

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamental programming concepts of Java	K1
CO2	Clear Knowledge on Linux	K2
CO3	Relate analysis techniques to data sets	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	L	M	M
CO2	S	M	M	S	M
CO3	S	M	L	M	S

S- Strong; M-Medium; L-Low

Syllabus

Java

1. Write a program to find the largest of n natural numbers.
2. Write a program to find whether a given number is prime or not.
3. Write program to display Fibonacci series
4. Write a program to create an array of 10 integers. Accept values from the user in that array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
5. Write java program for the following matrix operations:
 - a. Addition of two matrices
 - b. Summation of two matrices
 - c. Transpose of a matrix
 - d. Input the elements of matrices from user.
6. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
7. Write a Java program for the implementation of multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
8. Write a program for the following string operations:
 - a. Compare two strings
 - b. Concatenate two strings
 - c. Compute length of a string

Linux

9. Execution of various file/directory handling commands.
10. Simple shell script for basic arithmetic and logical calculations.
11. Shell scripts to perform various operations on given strings.

12. Shell scripts to explore system variables such as PATH, HOME etc.
13. Write a shell script to display list of users currently logged in.
14. Write a shell script to search an element from an array using binary searching.
15. Write a shell script to generate mark sheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student

Course Designers

1. S. Deepika
2. Dr. M.Rajeswari

JOB ORIENTED COURSE
BUSINESS VISUALISATION ANALYSIS
SUBJECT CODE – JOB1756

Hours: 60

Objectives:

- To instruct theoretical and practical knowledge in business visualization softwares

UNIT I

Tableau: Introduction and Getting Started: Tableau Desktop's role in the Tableau product line – Application terminology – Tableau Packaged Workbooks – Publishing to Tableau Server (Web) – Publishing to Tableau Reader – Publishing to Tableau Public – Publishing to PDF. Best Practices in Connecting to Data: Working with Meta data – Data source changes – Overview of other connection options. Working with Data: Filtering your data – Sorting – Building groups – Building hierarchies – Sets

UNIT II

Building Visualizations: Building Bar Charts – Building Text Tables – Building Line Charts – Building Scatter Plots – Building Heat Maps – Building Gantt Bar Charts – Building Pie Charts – Building Tree maps – Building Box Plots – Building Packed Bubble Charts – Building Map Views. **Building Dashboards:** Overview of dashboards – Building your first dashboard

UNIT III

Power BI:Introducing Power BI - What is Power BI?- The parts of Power BI - The flow of work in Power BI- Using Power BI - The building blocks of Power BI – Visualizations – Datasets – Reports - A quick look at the Power BI service - Create out-of-the-box dashboards with cloud services - Refreshing data in the Power BI service.

UNIT IV

Connect to data: Data sources in Power BI Desktop - Connect to data in Power BI Desktop - Connect to datasets in the Power BI service from Power BI Desktop - Import Excel workbooks into Power BI Desktop - Connect to data using generic interfaces in Power BI Desktop - Connect to an Oracle database - Run R scripts in Power BI Desktop - Connect to CSV files in Power BI Desktop.

UNIT V

Spark Overview:Features of Apache Spark,Apache Spark Components, Spark Clusters and Files - **RDD Fundamentals:** Purpose and Structure of RDDs, Transformations, Actions, and DAG - **Spark SQL:** Spark SQL and DataFrame Uses, DataFrame / SQL APIs, Jobs, Stages, and Tasks, Partitions and Shuffles, Data Locality - **Spark Streaming:** Streaming Sources and Tasks, DStream APIs and Stateful Streams, Reliability and Fault Recovery - **Spark Streaming:** Basic Principles of Machine Learning,classification, regression, clustering, collaborative filtering, dimensionality reduction.

Text Books:

Sl.No.	Author Name	Title of the Book	Publisher Name	Year & Edition
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1.	Joshua N. Milligan. Unit I & II	Learning Tableau - How Data Visualization Brings Business Intelligence to Life	Packt Publishing	Revised Edition
2.	Power BI : Study Material Prepared by Department Unit III – IV			
3.	Spark : Study Material Prepared by Department Unit V			

Reference Books:

Sl.No.	Author Name	Title of the Book	Publisher Name	Year & Edition
1.	George Peck	Tableau 8: The Official Guide	McGraw Hill Education	Revised Edition

PRACTICAL – BUSINESS VISUALISATION ANALYSIS

Tableau

1. Creating or modify a schedule
2. Publishing data in Tableau
3. Working with data, filter, sorting
4. Data visualization using charts and scatter plots
5. Report generation in Tableau

Power BI:

6. Sales and Marketing sample for Power BI
7. Customer Profitability sample for Power BI
8. Human Resources sample for Power BI
9. Supplier Quality Analysis sample for Power BI

Spark

10. Creating RDDs from Data Files, Reshaping Data to Add Structure, Interactive Queries Using RDDs
11. Creating DataFrames, Query with DataFrame API and SQL, Caching and Re-using DataFrames, Generating Graphics and Reports
12. Creating DStreams from Sources, Operating on DStream Data, Viewing Streaming Jobs in the Web