DEPARTMENT OF B COM (BUSINESS ANALYTICS)

CHOICE BASED CREDIT SYSTEM (CBCS) & LEARNING OUTCOMES BASED CURRICULAR FRAMEWORK (LOCF)

BACHELOR OF COMMERCE WITH BUSINESS ANALYTICS

2024 – 2027 BATCH

(I SEMESTER)

College of Excellence, **nirf** 2023 -4th Rank
Autonomous and Affiliated to Bharathiar University
Reaccredited with A⁺⁺ grade by NAAC, An ISO 9001:2015 Certified Institution
Peelamedu, Coimbatore-641004

PROGRAMME LEARNING OUTCOMES (PLO's)

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

PLO1: Exhibit conceptual and procedural foundations of business analytical methods and techniques integrated with disciplines such as commerce, mathematics, statistics, management, economics and computer science.

PLO2: 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.

PLO3: Inculcate programming knowledge and ability to explore Big Data technologies, and algorithms for data visualization and data inference of different industries.

PLO4: 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.

PLO5: 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 (PSO's)

The students at the time of graduation will

PSO1: To Provide 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: To provide perfect blend of analytical skills and business knowledge to excel as business analyst.

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(LOCF)BACHELOR OF COMMERCE WITH BUSINESS ANALYTICS – 2024-2027 BATCH AND ONWARDS

Semester	Part	Course Code	Title of the Course	Course Type	Instruction hrs/ week	Instruction hrs/sem	Tutorial hrs	Duration of Examination	CA	ESE	Total	Credits
			Programme & Branch: B Com (Business Analytics)									
			Scheme of Examination ***(Applicable to students admitted during the academic year 2024- 2025 onwards)***									
I	I	TAM2301A/ HIN2301A/ FRE2301A	Tamil / Hindi / French paper I	L	4	58	2	3	25	75	100	3
	II	ENG2301A	English Paper I	E	4	58	2	3	25	75	100	3
	III	CM23C01	Principles of Accounting	CC	5	73	2	3	25	75	100	3
		DA24C02	Fundamentals of Business Analytics	CC	6	88	2	3	25	75	100	4
		TH24A05	Statistics I	GE	5	73	2	3	25	75	100	4
		DA24CP1	Analysis with Excel Practical	CC	4	60	-	3	15	35	50*	2
	IV		**Non-Tamil Students**									
		NME23B1/ NME23A1	Basic Tamil I / Advanced Tamil I	AEC	2	28	2	-	100	-	100	2
			Students with Tamil as Language									
		NME23ES	Introduction to Entrepreneurship	AEC	2	30	-	-	100	-	100	
I-V	VI	24BONL1 24BONL2 24BONL3	Online Course I Online Course II Online Course III	ACC	-	-	-	-	-	-	-	-

L- Language   E- English
CC : Core Courses   GE : Generic Elective
AEC : Ability Enhancement Courses ACC – Additional Credit Course
CA- Continuous Assessment   ESE- End Semester Examination

*CA conducted for 25 and converted into 15, ESE conducted for 75 and converted into 35

Examination System

One test for continuous assessment will be conducted on predetermined dates i.e., commencing on the 50th day from the date of reopening. The Model exam will be conducted after completing 85th working days. Marks for ESE and CA with reference to the maximum for the courses will be as follows

2023-2024 Batch onwards
CA Question Paper Pattern and distribution of marks UG Language and English

Section A   5 x 1 (No choice)   :   5 Marks
Section B   4 x 5 (4 out of 6)   :   20 Marks (250 words)
Section C   2 x 10 (2 out of 3)   :   20 Marks (500 words)

Total   :   **45 Marks**

Marks UG- Core and Allied - (First 3 Units) CA
Question from each unit comprising of

One question with a weightage of 2 Marks   :2 x 3 = 6
One question with a weightage of 5 Marks (Internal Choice at the same CLO level) : 5 x 3 = 1
One question with a weightage of 8 Marks (Internal Choice at the same CLO level) : 8 x 3 = 24

Total   : 45 Marks

WEIGHTAGE ASSIGNED TO VARIOUS COMPONENTS OF CONTINUOUS INTERNAL ASSESSMENT

Practical

	Model Exam	Lab Performance (Practical+Interaction)	Regularity in Record Submission	Attendance	Maximum Marks
Core/ Allied	7	12(6+6)	3	3	**25**

Program 1   : 25 Marks   (Aim -10 , Coding -15)
Program 2   : 25 Marks
Viva   : 15 Marks
Record   : 10 Marks
Total   :   **75 Marks**

End Semester Examination – Question Paper Pattern and Distribution of Marks Language and English – UG

Section A   10 x 1 (10 out of 12)   : 10 Marks

Section B   5 x 5 (5 out of 7)   : 25 Marks (250 words)

Section C   4 x 10 (4 out of 6)   : 40 Marks (600 -700words)

Total   :75 Marks

UG - Core and Allied courses:

ESE Question Paper Pattern: 5 x 15 = 75 Marks

Question from each unit comprising of

One question with a weightage of 2 Marks :2 x 5 = 10

One question with a weightage of 5 Marks (Internal Choice at the same CLO level): 5 x 5 = 25

One question with a weightage of 8 Marks (Internal Choice at the same CLO level): 8 x 5 = 40

ESE Question Paper Pattern :(for Accounts Paper) 5 x 15 = 75 Marks

Question from each unit comprising of

One question with a weightage of 2 Marks : 2 x 5=10

One question with a weightage of 5 Marks : 5 x 5 =25

One question with a weightage of 8 Marks (Internal Choice at the same CLO level) : 8 x 5 = 40

Continuous Internal Assessment Pattern Theory I
Year UG (2023 Batch)

CA Test : 5 marks **(conducted for 45 marks after 50 days)**

Model Exam : 7 marks **(Conducted for 75 marks after 85 days**

(Each Unit 15 Marks))

Seminar/Assignment/Quiz : 5 marks

Class Participation : 5 marks

Attendance : 3 marks

Total **: 25 Marks**

Part IV
Introduction to Entrepreneurship /Women Studies / Value education / Environmental Studies / Design Thinking

Quiz : 50 marks

Assignment : 25 marks Project /

Case study : 25 marks

Total **:** **100 Marks**

MAPPING OF PLOs WITH CLOs

COURSE	PROGRAMME LEARNING OUTCOMES				
	PLO1	PLO2	PLO3	PLO4	PLO5
COURSE – CM23C01					
CLO1	S	M	S	M	S
CLO2	S	M	S	M	M
CLO3	S	M	M	M	M
CLO4	S	M	S	M	S
COURSE – DA24C02					
CLO1	S	S	M	S	M
CLO2	S	S	M	S	S
CLO3	M	M	S	S	M
CLO4	S	M	M	S	S
COURSE – DA24CP1					
CLO1	S	M	L	L	M
CLO2	S	S	S	S	S
CLO3	S	S	M	M	S
CLO4	S	M	M	L	S

S-Strong; M-Medium; L-Low

COURSE NUMBER	COURSE NAME	Category	L	T	P	Credit
CM23C01	PRINCIPLES OF ACCOUNTING	Theory	73	2	-	3

Preamble

- To enable the students to apply the conceptual principles and to develop an expertise in handling accounts of business entities and the consolidation of accounts through appropriate accounting techniques and policies.

Prerequisite

- Basic Knowledge in Financial Statements

Course Learning Outcomes

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

CLOs	CLO Statement	Knowledge Level
CLO1	Define the concepts and conventions in accounting	K1
CLO2	Interpret accounting statement using basic concepts.	K2
CLO3	Apply the procedures of recording transactions and preparation of Reports.	K3
CLO4	Articulate the accounting concepts to interpret the performance of a Firm.	K4

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	M	S	M	S
CLO2	S	M	S	M	M
CLO3	S	M	M	M	M
CLO4	S	M	S	M	S

S- Strong; M-Medium

Syllabus

Unit I (14 Hrs)

Basic Accounting Concepts (AS-1) - Rectification of errors - Final Accounts – Bank Reconciliation Statement.

Unit II (14 Hrs)

Average due date - Bills of exchange (trade bills only) -Joint Venture (AS-27).

Unit III (15 Hrs)

Departmental Accounts - Basis for allocation of expenses. Branch Accounts (Dependent Branches - Debtors and Stock & Debtors System - Independent Branches only)

Unit IV (15 Hrs)

Hire purchase Accounts: Default and Repossession - Hire purchase Trading Account - Installment purchase system.

Unit V (15 Hrs)

Depreciation (excluding change in method of depreciation) - Investment Account (AS-13).

Text Book

S.No.	Authors	Title	Publishers	Year & Edition
1.	Reddy T S & A Murthy	Financial Accounting	Margham Publications	Reprint 2021

Reference Books

S.No.	Authors	Title	Publishers	Year & Edition
1.	RL Gupta & Radhasamy	Advanced Accountancy (Vol I)	Sultan Chand & Sons.	2018, 13th ed.
2.	Jain S.P & Narang K.L	Principles of Accountancy	Kalyani Publishers	2018
3.	MC Shukla, T.S. Grewal & S.C. Gupta	Advanced Accountancy	S. Chand & sons	2016

Skill Components
- Identifying concepts and conventions adopted by a firm in their financial statement.
- Prepare a Bank Reconciliation Statement for the business concern.
- Study a firm's financial statement and present a report on the accounting policies followed
- To calculate the due date and amount on discounting of bills for a firm.
- Analyzing the financial statement of a hire purchase company and present a report onthe collection system.
- Analyse the treatment of depreciation for different firms.

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

Course Designers
1. Dr. S. Sujatha, Department of Commerce
2. Dr. G. Indrani, Department of Commerce

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA24C02	FUNDAMENTALS OF BUSINESS ANALYTICS	THEORY	88	2	-	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 the underlying business process

- To exhibit knowledge of data analysis techniques and to apply principles of data sciences integrating enterprise reporting

- Basic knowledge in computers

Course Learning Outcomes

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

CLOs	CLO Statement	Knowledge Level
CLO1	To define and understand the importance of business analytics and data science in business process and industry	K1
CLO2	To outline data integration, projecting, maintenance, designing and modeling of various data techniques	K2
CLO3	To identify the concepts of data warehouse, data profiling, data dimension, mobility and various related systems and their applications in different industries	K3
CLO4	To Analyse the business views using IT applications, its purpose and analysing various concepts relating to it and inculcate problem solving and decision-making skills	K4

Mapping with Programme Learning Outcomes

CLOs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	S	M	S	M
CLO2	S	S	M	S	S
CLO3	M	M	S	S	M
CLO4	S	M	M	S	S

S- Strong; M-Medium

Syllabus

Unit I   **(18 Hrs)**

Introduction to the BA Role: ***Business Analysis -Business Analyst - The evolving role of the Business Analyst - Competing in a data-driven world*.** 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. How companies are using big data and analytics - Why Everyone Needs Analytical Skills**.**

Unit II   **(18 Hrs)**

Business view of Information Technology Applications: Business Enterprise Functions - Core business process – Baldrige Business Excellence framework - Key purpose of

using IT in business - Internet-ready IT Applications - ***Technology Centric Applications*** - 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 – ***Characteristics – Storage and extraction process*** - Difference between semi structured and structured data.

Unit III (17 Hrs)

Introduction to OLTP and OLAP – OLTP – Transaction – Segmentation – Advantages -Challenges - OLAP **– *Different OLAP Architectures – OLTP and OLAP – Data models for OLTP and OLAP*** – Role of OLAP Tools in BI Architecture. OLAP Operations in Multidimensional data - 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 - ***Business Intelligence versus Business Analytics. BI Definitions and Concepts – BI Component Framework – Need for BI – BI Users*** – Business Intelligence applications – BI roles and responsibilities – BI tools.

Unit IV (18 Hrs)

Data Integration – Data Warehouse – Ralph Kimball's Approach vs. W.H. Inmon's Approach- Goals **–** Data sources **– *Extract, Transform and Load – Stages in ETL – ETL tools*** - Data Integration - Challenges – Technologies – Approaches - Data Quality maintenance – Data profiling. Data Integration in Healthcare Domain - Data Modeling – Basics – Types – Techniques – Fact table – Dimension Table – ***Typical Dimensional Models – Dimensional modeling life cycle*** – Designing the Dimensional Model.BI in Real world – BI and mobility – BI and cloud computing – BI for ERP systems –Social CRM and BI.

Unit V (17 Hrs)

Introduction to Industry 4.0- Need – ***Reasons for Adopting Industry 4.0*** - Definition – Goals and Design Principles - Technologies of Industry 4.0- ***Skills required for Industry 4.0*** - Advancements in Industry 4.0 – ***Impact of Industry 4.0 on Society, Business, Government and People*** - Introduction to 5.0 – ***KPI : Measures and Performance – Measurement System Terminology – Navigating a Business Enterprise*** – Role of Metrics and Metrics Supply Chain – Fact-based Decision Making and KPIS – KPI Usage in Companies.

Highlighted Contents offered in Blended Mode

Text Book

S.No.	Author Name	Title of the Book	Publisher	Year & Edition
1.	R.N.Prasad and Seema Acharya	Fundamentals of Business Analytics	Wiley	2016, 2nd Edition
2.	P.Kaliraj and Dr.T.Devi	Higher Education for Industry 4.0 and Transformation to Education 5.0	Bharathiar University	2020

Reference Books

S. No.	Author Name	Title of the Book	Publisher	Year & Edition

1.	Haydn Thomas – Demonoid	Business Analysis Fundamentals	Pearson Education	2015, Revised Edition
2.	Pang-Ning Tan Michael Steinbach, Vipin Kumar	Introduction to Data Mining	Pearson Education	2021,2nd Edition

Related Online Contents

- Fundamentals of Business Analytics-RN Prasad. Global edition: Second Edition
- Business Analytics-James R Evans. Second edition-Wiley

Skill Components

- Determine the concepts of business analytics and business processes.
- Analyzing the techniques of integration and modeling.
- Analyze the concept of data warehouse, OLTP, OLAP.
- Understand KPI and measures to apply in a business.
- Forecast on business intelligence concepts for enterprise reporting.

Pedagogy

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

Course Designers

1. Mrs. N. Sathya
2. Mrs.D.Divya

COURSE NUMBER	COURSE NAME	CATEGORY	L	T	P	CREDIT
DA24CP1	**ANALYSIS WITH EXCEL PRACTICAL**	**PRACTICAL**	-	-	60	2

Prerequisite

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

Preamble

- No prerequisite required

Course Learning Outcomes

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

CLOs	CLO Statement	Knowledge Level
CLO1	To understand and find commands in Excel, Get an head start with templates and setup an Excel template	K1
CLO2	Demonstrate the excel data model and connect to external data and use advance techniques for report visualization.	K2
CLO3	Discuss on statistical operation and tools used in Excel and Documentation and review tools	K3
CLO4	Illustrate on basic analytical tools and Application of financial functions	K4

Mapping with Program Learning Outcomes

CLŌs	PLO1	PLO2	PLO3	PLO4	PLO5
CLO1	S	M	L	L	M
CLO2	S	S	S	S	S
CLO3	S	S	M	M	S
CLO4	S	M	M	L	S

S-Strong; M-Medium; L-Low

Syllabus

1. Create an MS Excel worksheet to illustrate sorting function.

2. 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
2018	59.77
2013	121.19
2014	188.75
2015	135.81
2016	256.88
2017	337.41

a) Enter the data, as shown, into a work sheet and format the table as shown.
b) Create a formula to calculate rate of return for each year. Format the results as percentages with two decimal places.
c) Calculate the total return for the entire holding period. What is the compound average annual rate of return?
d) Create a Line chart showing the stock price from May 2006 to May 2011. 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?
e) Experiment with the formatting possibilities of the chart. For example, you might t ry 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?

3.In your position as research assistant to a portfolio manager, you need to analyse 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

f) Calculate the net profit margin for each year.

g) 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?

h) 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?

i) 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.

4.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

j)Do you think that Qualcomm can maintain the current growth rates of sales and net income over the long run? Why or why not?

k) 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?

5. 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 years' 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.

     i. Sales

    ii. EBIT

   iii. Total Assets

   iv. Accounts Payable

    v. Retained Earnings

vi. Cash budget using WhatIf Analysis

vii. Using Goal Seek to calculate Break Even Points

viii. Demonstrate the statistical functions of Qualcomm Company by using MS Excel.

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

x. Use Goal Seek to find out what grade is need on the final assignment to pass the class given that the grades on the first four assignments are **64**, **55**, **78**, and **59.** Use formula or function that calculates the final grade.

xi. Analyzing Data sets with Tables and Pivot Tables

xii. Create an Excel Worksheet for the monthly sales of a product and also represent the data by using bar chart.

xiii.Use Goal Seek in Excel find the grade of the fourth exam that produces a final grade of 70.

Exam	Marks
Exam 1	50
Exam 2	80
Exam 3	60

xiv.Prepare a pay-bill using a worksheet. The worksheet should contain Employee Id, Name, Designation, Experience and Basic Salary and Job ID.

If Job Id is 1 then DA is 45% of the basic salary. HRA is Rs. 5500. If Job Id is 2 then DA is 40% of the basic salary. HRA is Rs. 4500.

For all the other Job ids DA is 35% of the basic salary and HRA is Rs. 3500.

For all the above Job ids PF to be deducted is 4%.

For the job ids 1 & 2, Rs. 100 to be deducted as Professional Tax.

xv.   Design a chart projecting the cash estimate of a concern.

xvi.   Calculate the slope of a linear trend line equation using GROWTH.

Pedagogy

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

Course Designers

1. Mrs. R. Hemapriya
2. Ms.M.Pooja