St. Joseph's College of Commerce
(Autonomous)
163, Brigade Road, Bengaluru – 560 025

Accredited and Re-Accredited with 'A' Grade by the National Assessment and Accreditation Council (NAAC)

Recognized by the UGC as
"COLLEGE WITH POTENTIAL FOR EXCELLENCE"

Bachelor of Commerce (Analytics) Semester V & VI

Syllabus w.e.f., 2018 – 2019
Academic year 2020-2021

St. Joseph's College of Commerce

(An Autonomous Institution affiliated to
Bengaluru Central University)
Dedicated to Excellence with Relevance

St. Joseph's College, Bengaluru was established in 1882 by the French Missionary Fathers for the purpose of imparting higher education. In 1937, the management of the College was handed over to the Jesuits, a worldwide Religious order going by the name 'Society of Jesus'. The college and its sister institutions are now managed by the Bangalore Jesuit Educational Society (Regd). A department of Commerce was established in the College in 1949. In 1972, this department became an independent college by the name St Joseph's College of Commerce.

Since its inception as an independent institution, the College has shown growth and progress in academics, co-curricular and extra – curricular activities. Besides, there has been a constant effort made by the College to acquire excellence in every aspect of good education. Currently it stands accredited to the National Assessment and Accreditation Council (NAAC) with an 'A' grade. . In February 2010, the College was recognized by the UGC as a "College with Potential for Excellence".

The College aims at the integral formation of its students, helping them to become men and women for others. Though it is a Christian minority institution, the college has been imparting liberal education to the students of all denominations without any discrimination. St. Joseph's College of Commerce is affiliated to Bengaluru Central University and became autonomous in September 2005. The motto of the college is Fide et Labore or 'Faith and Toil' and the college attempts to inculcate the motto in every student through its various programmes and courses.

The College is committed to providing quality education to its students. It offers Bachelor of Commerce and Bachelor of Business Administration, a three year under graduate degree programme, and Master of Commerce , a two year Post Graduate programme. Highly qualified staff members, excellent Infrastructure of the college like spacious classrooms, good library and computer lab facilities helps to promote academic excellence.

GOALS OF THE B.COM PROGRAMME

1. To provide conceptual knowledge and application skills in the domain of Commerce studies.
2. To provide knowledge and skills in almost all areas of business to be able to meet expectations of business and to handle basic business tasks, thus equipping a student to take up entry – level jobs in different sectors of commerce, trade and industry.
3. To sharpen the students' analytical and decision making skills.
4. To provide a good foundation to students who plan to pursue professional programmes like CA, ICWAI, ACS, CFA and MBA.
5. To facilitate students to acquire skills and abilities to become competent and competitive in order to be assured of good careers and job placements.
6. To develop entrepreneurship abilities and managerial skills in students so as to enable them to establish and manage their own business establishments effectively.
7. To develop ethical Business professionals with a broad understanding of Business from an interdisciplinary perspective.

I. ELIGIBILITY FOR ADMISSION

Candidates who have completed Two year Pre – University programme of Karnataka State or its equivalent are eligible for admission into this Programme.

II. DURATION OF THE PROGRAMME

The programme of study is 3 years of Six Semesters. A candidate shall complete his/her degree within five (5) academic years from the date of his/her admission to the first semester.

III. MEDIUM OF INSTRUCTION

The medium of instruction shall be English.

IV. ATTENDANCE

a. A student shall be considered to have satisfied the requirement of attendance for the semester, if he/she has attended not less than 75% in aggregate of the number of working periods in each of the courses compulsorily.

b. A student who fails to complete the programme in the manner stated above shall not be permitted to take the end semester examination.

B.COM PROGRAMME MATRIX, PROGRAMME STRUCTURE & SEMESTER SCHEME OF EXAMINATION

Refer page no 7 – 9

V. TEACHING AND EVALUATION

M.Com/MBA/MFA/MBS graduates with B.Com, B.B.A & BBS as basic degree from a recognized university are only eligible to teach and to evaluate the courses including part – B courses of III and IV semesters (except languages, compulsory additional courses and core Information Technology related courses). Languages and additional courses shall be taught by the graduates as recognized by the respective Board of Studies.

VI. EVALUATION SYSTEM

Evaluation for UG programme consists of two components, viz. Continuous Internal Assessment(CIA)and End Semester Examination (ESE) with the weightage of 30% and 70% respectively.

Continuous Internal Assessment (CIA) includes a centrally organized MID TERM TEST for 20 marks and other exercises administered by the teacher such as Unit test/ Online test /Snap test /Surprise test /Quiz /Assignment / Presentation /Project / Research article /Seminar etc. for an aggregate of 10 marks. Each teaching faculty is required to maintain a record of the Continuous Internal Assessment.
The End Semester Examination will be conducted at the end of each semester. The duration and maximum marks for the End Semester Examination is 3 hours and for 70 marks.

VII. MINIMUM FOR A PASS

A UG student has to get a minimum of 40% marks in the ESE (28 on 70) and 40% aggregate in CIA & ESE (40 on 100) for a pass in each course. The minimum SGPA to qualify for the B.Com degree is 4.00 and a pass in all courses.

VIII. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Grading System For Choice Based Credit System (CBCS)-The College adopts a ten point grading system. The modalities and the operational details are as follows.

i. Credits - Credits are assigned to courses based on the following broad classification

Course category	Instruction hrs / week	Credits
Languages	3 hrs	2
Major Core	4 hrs	3
Major Optional	4 hrs	4
Allied Required	4 hrs	3
Open electives	4 hrs	3

ii. Grade Points – The papers are marked in a conventional way for 100 marks. The marks obtained are converted to grade point according to the following table. If a student is absent for the paper the grade point assigned is 0.

% Marks	95-100	90-94	85-89	80-84	75-79	70-74	65-69	60-64	55-59	50-54	45-49	40-44	Below 40
Grade Points	10	9.5	9	8.5	8	7.5	7	6.5	6	5.5	5	4.5	0

iii. The semester grade point average (SGPA) - is the sum of the product of the credits with the grade points scored in all courses divided by the total credit of Part A and Part B in the semester.

SGPA = ∑Credits x Grade Points / Total Credits Minimum SGPA for a pass is 4.

If a student has not passed in a course or is absent then the SGPA is not assigned.

iv. The cumulative grade point average (CGPA)- is the weighted average of all the courses undergone by a student over all the six semesters of a programme.

CGPA = ∑ Total credits in the semester x SGPA / Total credits of the programme. SGPA and CGPA will be rounded off to two decimal places

v. Interpretation of SGPA/CGPA/ Classification of final result for a UG Programme.

SGPA/CGPA/ Course Grade Point	Grade	Result/Class Description
9.00-10.00	O	Outstanding
8.00-8.99	A+	First Class Exemplary
7.00-7.99	A	First Class Distinction
6.00-6.99	B+	First Class
5.50-5.99	B	High Second Class
5.00-.5.49	C	Second Class
4.00-4.99	P	Pass Class
Below 4	RA	To Re-Appear

IX.PATTERN OF QUESTION PAPER

ESE Question Paper Pattern (3 Hours duration, Max. Marks: 70)

Section-A	Conceptual / Objective Questions	1 mark × 10 questions	10 Marks
Section–B	Analytical Questions	6 marks × 3 questions	18 Marks
Section–C	Essay Questions	15 marks × 2 questions	30 Marks
Section –D	Compulsory Question/ Case study	12 marks × 1 question	12 Marks
		Total	**70 Marks**

X. REVALUATION, RETOTALING and IMPROVEMENT

There is provision for **Revaluation, Re-totaling and Improvement** within two weeks of the publication of the results.

Revaluation and Re-Totaling: There is a provision for **Revaluation and Re-Totaling** of marks if the application is made within 2 weeks of the publication of results with the prescribed fee.

Provision for Improvement: A candidate, who desires to improve his/her End Semester Examination marks, has to first withdraw his/her original End Semester Examination marks. The student will be awarded whatever marks he/she obtains in the later appearance even if they are less than the marks awarded previously.

B.COM (ANALYTICS)
PROGRAMME MATRIX

Semester / Content	I	II	III	IV	V	VI	TOTAL
Part A: Languages							
English	3hr/2Cr	3hr/2Cr	3hr/2Cr	3hr/2Cr	-	-	
Language	3hr/2Cr	3hr/2Cr	3hr/2Cr	3hr/2Cr	-	-	
I	4 Cr	4 Cr	4 Cr	4 Cr	-	-	16
Part B: Core Courses							
Content	I	II	III	IV	V	VI	TOTAL
Major core	• Financial Accounting • Principles of Management • Mathematics	• Corporate Accounting • Business Law • Statistics	• Programming for Analytics • Financial Management • Marketing Management	• Business Statistics with R Programming • Human Resource Management	• Income Tax-I • Cost Accounting Principles and Practice Auditing	• Income Tax-II • Management Accounting • Operations Research • Company Law & Secretarial practice	
Allied Required	• B.Economics I	• Business Economics II	-	• Theory & Practice of Banking		-	
Major Optional	NA	NA	NA	NA	• Elective Paper-1 Multivariate Data Analysis • Elective Paper-2 Data Visualization	• Elective Paper-3 Data Mining with R • Elective Paper-4 Text Mining	
Open Electives	NA	NA	4hr/3Cr	4hr/3Cr	-	-	
Skill based Major					Course/ Elective Skill based paper	-	
II	12 Cr	12 Cr	12 Cr	12 Cr	21 Cr	20 Cr	89
Part C: Foundation, skill development, interdisciplinary & Sports							
HD	1 Cr	1 Cr	-	-	-	-	
IC	-	2 Cr	-	-	-	-	
EVS	-	-	-	2 Cr	-	-	
Internship	-	-	-	–	-	1 Cr	
Certificate & Sports Program	1 Cr Tally			1 Cr Excel		1 Cr Advanced Excel	
III	2 Cr	3 Cr		3 Cr		2 Cr	10
Part D: Extension and extracurricular activities							
Extension Curricular & Others	-	1 Cr	-	1 Cr	-	1 Cr	
IV	-	1 Cr	-	1 Cr	-	1 Cr	03
Total	18 Cr	20 Cr	16 Cr	20 Cr	21 Cr	23 Cr	118

PROGRAMME STRUCTURE (for V and VI Semesters)
SEMESTER SCHEME OF EXAMINATION
CORE COURSES
SEMESTER – V

Course code	Title of the paper	Lecture hrs per week	Marks		Total marks	Grade / credit
			CIA	ESE		
C5 18MC501	Income Tax I	04	30	70	100	03
C5 18MC502	Cost Accounting	04	30	70	100	03
C5 18MC503	Principles and Practice of Auditing	04	30	70	100	03
EL 18DA504	Multivariate Data Analysis	04	30	70	100	04
EL 18DA505	Data Visualization	04	30	70	100	04
SB 18FN 506	Elective: Skill Based paper	04	30	70	100	04
	Total	**24**	**180**	**420**	**600**	**21**

SEMESTER - VI

Course code	Title of the paper	Lecture hrs per week	Marks		Total marks	Grade / credit
			CIA	ESE		
C5 18MC601	Income Tax II	04	30	70	100	03
C5 18MC602	Management Accounting	04	30	70	100	03
C5 18MC603	Operations Research	04	30	70	100	03
C5 18MC604	Company Law and Secretarial Practice	04	30	70	100	03
EL 18DA605	Data Mining with R	04	30	70	100	04
EL 18DA606	Text Mining	04	30	70	100	04
	Total	**24**	**180**	**420**	**600**	**20**

CIA – Continuous Internal Assessment *ESE -End Semester Examination*

FOUNDATION COURSES

Sem No	Course Code	Title of the Paper	Lecture Hrs per week	Grade/ Credits
VI	FSD 15 501	Advanced Excel	1	1
VI	FSD 15 601	Corporate Internship		1

Outcome Based Education (OBE)

B.Com (Analytics) Programme

Program Educational Objectives (PEO)

After undergoing the B.Com (Analytics) Programme, a student will be able to:

1. Develop himself / herself as an individual with conceptual knowledge in the multiple disciplines of analytics, comprising of accounting, mathematics, statistics, business metrics, information technology and management.
2. Develop himself / herself as an individual who can pursue their career in the area of analytics and continue their professional development by obtaining a master's degree specialized indifferent domains related to analytics.
3. Possess professional competence to pursue higher studies, research, life-long learning for continuous growth and development.
4. Adapt to a rapidly changing environment with new learned and applied skills, become socially responsible and value driven citizens, committed to sustainable development.

Programme Outcomes (PO)

After the completion of the B.Com (Analytics) Programme, the student will be able to:

PO1 - Demonstrate an understanding of every dimension of Business environment to predict the character of future business environment.
PO2 - Propose and implement appropriate decisions in all areas of business management including finance, marketing, human resource and operations.
PO3-Demonstrate the diverse knowledge of business and corporate laws, and their applicability in business, finance and audit.
PO4 - Apply the necessary competencies and creativity required to undertake entrepreneurship as a desirable and feasible career option.
PO5 - Develop broad-based business skills, knowledge, and development of general and specific capabilities to meet the current and future expectation of the business, industry and economy at the national and global level.

PO6 - Fulfil educational entrance requirements of relevant provisional bodies and enable the student to devise a career in professional accounting.
PO7 - Plan, organize, co-ordinate, direct and control both, business enterprise and non – governmental organizations.
PO8 - Appreciate the significance of sustainable development.
PO9 - Achieve higher levels of proficiency and self-actualization through the pursuit of life-long learning.
PO10 - Create, select, and apply appropriate techniques ,resources and modern management and IT tools including prediction and modeling to complex management activities with an understanding of the limitations.

Program Specific Outcomes (PSOs)

PO11- Business Analytic decisions: Apply analytics' techniques to analyze and interpret data, using the latest analytical tools to solve business problems.
PO12 - Perform descriptive, predictive and prescriptive analytics: Identify the advanced topics in the area of analytics (business problem) with their knowledge of different functional areas of management and perform descriptive, predictive and prescriptive analytics with structured, semi – structured and unstructured data.

SEMESTER - V
C5 18 MC 501: INCOME TAX – I

Course Objectives

The students will be able to:

1. Explain the canon of taxation, powers and functions of Income tax authorities, officers and commissioner and CBDT and types of assessment of individual assessee.
2. Define the terms connected with assessment year , previous year, exempted income from agricultural income and total income.
3. Compare and contrast the receipts, Expenditure and Losses of revenue and Capital nature.
4. Identify the residential status and incidence of tax for the computation taxable income from the perspective of Individual, HUF and Company of residential status only.
5. Compute income from salary of an Individual assessee after taking into consideration of U/S 89(1) and 88.
6. Compute income from House property an Individual assessee after taking into consideration of deduction U/S 24.

Module – 1: Introduction **6 Hrs.**

Brief history of Income Tax – Legal Frame work– Cannons of Taxation- Finance Bill – Scheme of Income Tax, Income Tax Authorities- Income tax officer and powers and functions, CBDT- powers and functions, Commissioner of Income Tax- powers and functions, Types of assessment and rectification of mistakes, Recovery of tax and refunds. ICDS- An Overview

Module – 2: Important Definitions **10 Hrs.**

Definition: Assessee – Person – Assessment Year – Previous Year– Income – Gross Total Income – Total Income, Exempted Incomes- Agricultural Income (Including Integration of Agricultural Income with Non-Agricultural Income).

Module 3: Revenue and Capital Items **2 hrs.**

Revenue and Capital (a) Receipts, (b) Expenditure and (c) Losses.

Module – 4: Residential Status and incidence of tax 8 hrs.

Residential status– Resident – Ordinary & Not ordinary and Non- Resident of individual with incidence of tax – HUF & company – Residential status only.

Module-5: Income from Salary 20 hrs.

Income from Salary – Features of Salary Income – Basic Salary– Allowance – Types – Perquisites – Types section 89(1) – Tax Rebate U/S 88 – Problems.

Module-6: Income from House Property 14 hrs.

Introduction – Annual value under different situations (self- occupied let out – partly self-occupied partly let out – portion wise and time wise) – deductions (u/s 24) – problems.

Skill Development

(These activities are only indicative, the Faculty member can innovate)

1. Form No. 49A (PAN) and 49B.
2. Filing of Income Tax Returns.
3. List of enclosures to be made along with IT returns (with reference to salary & H.P).
4. Preparation of Form-16.

Course Outcomes

After completion of the course the students will be able to:

1. Describe the canon of taxation, powers and functions of Income tax authorities, officers and commissioner and CTDT and types of assessment of individual assessee.
2. Define the terms connected with assessment year , previous year, exempted income from agricultural income and total income.
3. Compare and contrast the receipts, Expenditure and Losses of revenue and Capital nature.
4. Identify the residential status and incidence of tax for the computation taxable income from the perspective of Individual, HUF and Company of residential status only.

5. Show the computation of income from salary of an Individual assessee after taking into consideration of U/S 89(1) and 88.
6. Show the computation of income from House property an Individual assessee after taking into consideration of deduction U/S 24.

Books for Reference

- *B. B. Lal: Direct Taxes, Konark Publisher (P) Ltd.*
- *B. S. Raman: Income Tax.*
- *Bhagwathi Prasad: Direct Taxes – Law and Practice, Wishwa Prakashana.*
- *Dinakar Pagare: Law and Practice of Income Tax, Sultan Chand and Sons.*
- *Dr. Girish Ahuja & Dr. Ravi Gupta: Income Tax.*
- *Dr. Mehrotra & Dr. Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication.*
- *Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann Publication.*

SEMESTER – V
C5 18MC 502: COST ACCOUNTING

Course Objectives

The students will be able to:

1. Explain the concepts, Methods and techniques of Cost accounting.

2. Prepare a Cost statement/Cost sheet in accordance with cost behavior (changes in output or activity or volume).

3. Prepare store ledger using FIFO, LIFO, Simple and weighted average method as tool of material control.

4. Compute cost of labour using Time and Piece rate system – Halsey and Rowan premium system – Taylor and Merricks differential piece rate system as tool of Labour control.

5. Compute statement showing allocation and apportionment of overheads of service department to Producing Departments by using Repeated and simultaneous equation Methods.

6. Compute statement showing the reconciliation of cost and financial accounts.

Module 1: Basic Cost Concepts and Classification 5 Hrs

Meaning – Cost accounting – Cost accountancy – Costing – Cost accounting and management – Objectives of Cost Accounting – Cost accounting v/s Financial Accounting – Cost Accounting v/s Management Accounting – Advantages of cost accounting – Methods of costing – Techniques (types) of costing –– Cost centres(Meaning and purpose) – Cost units(Meaning and importance) – Cost accounting departments–Brief note on Cost Audit Records and Report Rules.

Module 2: Cost Concepts and Classification 12 Hrs

Meaning - Cost – Expenses – Losses – Classification of costs - Cost statement or cost sheet – Tender and quotation - Job and Batch Costing.

Module 3: Material Control and Material Costing 10 Hrs

Materials – Concepts and objectives of material control – Organization for material control – Purchasing and receiving procedure – Some issues in materials procurement – stores organization – Inventory system – Inventory shortages (losses) and overages – Inventory control. Calculations of Stock levels and EOQ with or without discount.
Costing material received – Costing material issues (FIFO, LIFO, simple and weighted average method only) – Pricing of materials returned to vendor – Pricing of materials returned to storeroom – Selection of a material pricing method.

Module – 4: Labour Costs - Accounting and Control 10 Hrs

Introduction – Direct labour and indirect labour – Organization for labour control – Wage systems – Incentives wage plans – Work study – Job evaluation and merit rating – Time and motion study – Labour turnover – Treatment of labour cost related items – Methods of remunerating labour – Time and piece rate system – Halsey and Rowan premium systems – Taylor and Merrick's differential piece rate system.

Module 5: Overhead Distribution 15 Hrs

Concept – Classification of overheads – Factory overhead - Fixed – Semi variable and variable – Factory overheads - Accounting and distribution – Collection and codification of factory overheads – Allocation and apportionment of factory overheads – Apportionment of service departments overheads to producing departments (repeated and simultaneous equation method) – Absorption of factory overhead (Machine hour rate) – Selecting an absorption rate.

Module 6: Reconciliation of Cost and Financial Accounts 8 Hrs

Need for reconciliation – Reasons for differences in profits – Problem on preparation of reconciliation statement and memorandum reconciliation accounts.

Skill Development

(These activities are only indicative, the Faculty member can innovate)

1. List methods of costing adopted by industries located in the region.

2. List materials consumed in any two organizations of your choice.

3. Collection of different formats – materials requisition – purchase requisition-bin card-stores ledger.

4. Preparation of wage sheet / pay roll with imaginary figures.

5. List out the various expenses of two companies and prepare the cost sheet.

Course Outcomes

After completion of the course the students will be able to:

1. Explain the Concepts, Methods and Techniques of Cost accounting.

2. Prepare a Cost statement/Cost sheet in accordance with cost behavior (changes in output or activity or volume).

3. Prepare store ledger using FIFO, LIFO, Simple and weighted average method as tool of material control.

4. Compute cost of labour using Time and Piece rate system – Halsey and Rowan premium system – Taylor and Merricks differential piece rate system as tool of Labour control.

5. Compute statement showing allocation and apportionment of overheads of service department to Producing Departments by using Repeated and simultaneous equation Methods.

6. Compute statement showing the reconciliation of cost and financial accounts.

Books for Reference

- *Colin Drury: Management and Cost Accounting.*
- *Nigam: Theory and Techniques of Cost Accounting.*
- *S. P. Jain & K L Narang: Cost and Management Accounting.*
- *Dr. S. N. Maheshwari: Cost Accounting.*
- *JawaharLal: Cost Accounting.*
- *M. N. Arora: Cost Accounting*

SEMESTER – V

C5 18MC 503: PRINCIPLES & PRACTICE OF AUDITING

Course Objective

The students will be able to:

1. Describe the meaning, objectives, types of Audit, EDP Audit, XBRL and practices as per the Auditing and Assurance Standard Board prescribed by ICAI.
2. Devise an Audit plan to carry out process of Auditing for an organization as per the Standards of Auditing.
3. Examine the existing Internal Control system and communication of internal control weaknesses.
4. Illustrate the roles and responsibilities of a Company Auditor in accordance with Companies Act 2013.
5. Develop an Audit Report that is in conformity with SA 700 – 799.
6. Analyze Forensic Auditing, the role of Audit committees and its investigation in the context of Corporate Governance.

Module – 1: Introduction to Auditing: (Standards of Auditing SA200-299) 8 Hrs

Auditing- meaning, definition. Objectives of an audit - primary & secondary objective. Case Laws on Audit Objectives. Types of Audit – Statutory & Independent Audit. Meaning of errors, Classification of errors, its detection by an auditor. Frauds – meaning, intention, classification & detection by auditor. Window dressing of financial statements. An overview of Auditing and Assurance Standards issued by ICAI.-EDP audit-Extended Business Reporting Language.

Module – 2: Audit Planning: (Standards of Auditing SA200-599) 12Hrs

Commencing an Audit – Audit Engagement letter, Commencement procedures- (SA 210)

Documentation – Documentation as under SA 230-Audit working papers, Audit files: Permanent and current audit files, Ownership and custody of

working papers, materiality (SA 320), audit evidence (SA 500) and documentation.

Formulating an Audit Programme, drawing up the Audit Process. Audit Procedures- Compliance procedures & tests of Detail. Auditing Techniques. Statistical Sampling (SA530) in Auditing. Vouching & verification.

Module – 3: Internal Control: (SA 265) 12 Hrs

Concept of Internal Control, Internal check & Internal Audit, objectives. Features of a good Internal Control System. Methods of recording existing Internal Control Systems followed by an auditor – Questionnaire, Check list & flow chart methods. Role of the management. Internal control in specific areas – Sales & debtors, Purchases & creditors, Cash & bank balance/receipts/ payments, Fixed Assets, Investments. Review & evaluation of Internal Control Systems, Risk assessment. Reporting to clients on Internal Control weaknesses. (SA 265)

Module – 4: The Company Auditor 10 Hrs

Appointment of Auditor, Remuneration, Functions, Duties of an Auditor. Rights & Liabilities of an Auditor as per Companies Act 2013.

Module -5: Audit Report (SA700-799) 8 Hrs

Auditors Opinion, nature of an Auditors Opinion. Basics of An Audit Report – True & fair view, Audit examination, Information & explanations from the management, Statement of facts Vs. Expression of opinion, date of report & signing. Types of Audit Report. Qualifications in the Auditors Report.

Module – 6: Corporate Governance and investigation 10 Hrs

Audit Committees and Corporate Governance, Investigation including Due Diligence.

Forensic Audit: Introduction and Meaning - Needs and Objectives - Frauds and Forensic Audits - Forensic Audit Laws and Regulations - Cyber Forensics.

Skill Development

(*These activities are only indicative, the Faculty member can innovate*)

1. Collect the information about types of audit conducted in any one Organization.

2. Visit an audit firm; write about the procedure followed by them in auditing the books of accounts of a firm.

3. Draft an investigation on behalf of a Public Limited Company.

4. Record the verification procedure with respect to any one fixed asset.

5. Prepare a qualified or clean audit report for a given situation.

6. Case law on depreciation – facts and judgments.

7. List out Mandatory Standards issued by ICAI.

Course Outcomes

After completion of the course, the students will be able to:

1. Describe the meaning, objectives, types of Audit, EDP Audit, XBRL and practices as per the Auditing and Assurance Standard Board prescribed by ICAI.
2. Devise an Audit plan to carry out process of Auditing for an organization as per the Standards of Auditing.
3. Examine the existing Internal Control system and communication of internal control weaknesses.
4. Illustrate the roles and responsibilities of a Company Auditor in accordance with Companies Act 2013.
5. Develop an Audit Report that is in conformity with SA 700 – 799.
6. Analyze Forensic Auditing, the role of Audit committees and its investigation in the context of Corporate Governance.

Books for Reference

- *B. N. Tandon, S. Sudharsanam& S. Sundharabahu: A Handbook of Practical Auditing, S. Chand & Co. Delhi.*
- *B. N. Tandon: Auditing, S. Chandra & co. Ltd., Delhi.*
- *D. P. Jain: Auditing, Konark Publishers Pvt. Ltd., Delhi.*
- *DinakarPagare: Practice of Auditing*
- *Dr. T. R. Sharma: Auditing, SahityaBhavan, Agra.*
- *JagadeeshPrakash: Auditing.*
- *Kamal Gupta & Ashok Arora: Fundamentals of Auditing, Tata McGraw Hill.*
- *C.A Institute study material for Inter and final examinations*

SEMESTER – V
ELECTIVE I: DATA ANALYTICS
PAPER-I:
EL 18 DA504: Multivariate Data Analysis

Course Objectives

The students will be able to:

1. Examine the applicability of advanced analytical models based on Multivariate Data.
2. Apply Data Cleansing Techniques such as Missing Value Treatment and Outlier Detection on Multivariate Data.
3. Use the Logistic Regression Technique to assess the model performance by using performance measures such as Classification Matrix, ROC curve.
4. Deploy Time Series Smoothing models to remove random variations based on Moving Averages, Exponential Smoothing.
5. Apply Stationarity checks based on ADF Tests and build Autoregressive and Moving Averages Models.

Unit 1: Overview of Multivariate Statistics 12hrs

Nature of Multivariate Analysis, Validity and Reliability, Types of Multivariate Techniques, PCA and Factor Analysis, Multiple Regression, Logistic Regression, Canonical Correlation, Conjoint Analysis, Cluster Analysis, Multi-Dimensional Scaling, Correspondence Analysis, Structural Equation Modeling, Multivariate Model Building.

Unit 2: Data Cleaning and Multivariate Techniques 12hrs

Graphical Examination of Data, Convert Un-Tidy Data into Tidy Data. Missing Data, Imputation of Missing Data by Central Tendency and kNN Method. Outliers, Winsorization of Outliers, Testing the Assumptions of Multivariate Analysis, Incorporating Nonmetric Data with Dummy Variables, Managerial Overview of the Results.

Unit 3: Logistic Regression 12hrs

Binary Classification versus Point Estimation, Odds versus Probability, Logit Function, Classification Matrix, Individual Group Classification

Efficiency, Overall Classification Efficiency, Nagelkerke R Square, Receiver Operating Characteristic Curve, Sensitivity, Specificity, Area Under ROC Curve, Cut-Offs, True Positive Rate and False Positive Rate.

Unit 4: Introduction to Time Series **12hrs**

Nature of Time Series, Components of Time Series, Secular Trend, Seasonal Variations, Cyclical Variations, Irregular Variations, Time Series Decomposition, Smoothing Techniques, Moving Average, Weighted Moving Average, Exponential Smoothing, Double Exponential Smoothing, Regression Trend Analysis, Autocorrelation and Auto regression.

Unit 5: Univariate Time Series Models **12hrs**

Tests for Stationarity, Graphical Method, Unit Root Test, Augmented Dickey Fuller Test, Phillips–PerronTest, Schmidt–Phillips Test, KPSS Test, Identification of ARMA Models& Parameter Estimation, Testing Significance with Forecasting, Stationary Restriction for ARMA Models, ARIMA Models, Model Parameter Estimation, And Testing Parameter Significance.

Skill Development Activities
(These activities are only indicative, the Faculty member can innovate)

1. Conceptualize and apply Multivariate skills and hands-on techniques using R programming in analyzing data.
2. Perform Outlier Treatment based on Winsorization method on Multivariate Data.
3. Setting up and estimating Principal Component Analysis (PCA).
4. Implement and create 2D/3D Multivariate visualizations in R.
5. Perform Time Series Analysis based on AR, MA, ARIMA, ARMA Models and do stationary checks using ADF Test.

Course Outcomes

After completion of the course, the students will be able to:

1. Justify the applicability of the Techniques of Multivariate Data Summary, Exploratory Data Analysis and Dimensionality Reduction.
2. Apply different Data Cleansing Methods such as Outlier Removal, Missing Values Treatment involving Multivariate Data.
3. Apply the Logistic Regression Models and present the findings using Classification Matrices, ROC Curves.
4. Compare and contrast the Forecasting based on different Smoothing Techniques by using Time series data.
5. Use the Univariate Time Series Models by performing several tests such as AD Fuller, KPSS, Parameter Significance.

Reference Books

- *Hair, J. F. et al. (2015). Multivariate Data Analysis, 6th edition. NJ: Prentice Hall.*
- *Aiken, L. S., & West, S. G. (1991). Multiple Regression: Testing and Interpreting Interactions. Newbury Park, CA: Sage.*
- *Hamilton, J. D. (1994). Time Series Analysis. Princeton University Press.*
- *Enders, W. (2010). Applied Econometric Time Series. Hoboken, NJ: John Wiley & Sons.*
- *Menard, S. (2002). Applied Logistic Regression Analysis. Thousand Oaks, CA: Sage.*
- *Tabachnick, B. and Fidell, L (2007). Using Multivariate Statistics, New York: Allyn & Bacon.*

SEMESTER – V
ELECTIVE–II : DATA ANALYTICS
PAPER-II:
EL 18 DA 505: Data Visualization

Course Objectives

The students will be able to:

1. Examine the implications and applicability of Data Visualization in the domain of Analytics.
2. Use the visuals using ggplot2 library in R.
3. Choose the appropriate advanced level graphical attributes and characteristics so as to create visually appealing graphs and plots.
4. Use the reusable piece of codes which can be used to alter graphical properties and attributes pertaining to the data.
5. Create graphs, plots, Dashboards and Stories using Tableau Visualization Tool.

Unit 1: Introduction to Data Visualization & Infographics 12hrs

Importance of Data Visualization, Grammar of Graphics, Wilkinson's Grammar, Wickham's Grammar, Aesthetic Attributes, Geometric Objects, Faceting as a Subset of Plot, Mapping of Data, Layers, Scales, Coordinate System, Theme, Static Graphics versus Interactive Graphics.

Unit 2: Data Visualization in R with ggplot2 12hrs

Key Components of a Plot- Data, Aesthetics and Geoms, Colour, Size, Shape and other Aesthetic Attributes, Plot Geoms- Smoother to a Plot, Boxplots and Jittered Points, Histograms, Bar Charts, Line and Path Plots, Modifying the Axes, Labels, Annotations, Collective Geoms, Surface Plots, Weighted Data, Dealing with Over-plotting.

Unit 3: Grammar of Visualization 12hrs

Mapping Aesthetics, Scaling, Grammar of Layers, Coordinate System, Faceting, Aesthetics in the Plot versus Aesthetics in Layers, setting versus Mapping, Generated Variables, Position Adjustments, Scale Title, Breaks and Labels, Layers and Legends, Legend Layout, Facet Wrap, Facet Grid, Theme Elements.

Unit 4: Programming with ggplot2 **12hrs**

Overview of Functions, Object or Component of a Plot, Creating an Object, Multiple Components, adding two Layers in a Function, Plotting Components, Annotations, Additional Arguments in a Function, Plotting Functions, Indirectly Referring to Variables, The Plot Environment, Functional Programming.

Unit 5: Visualization with Tableau **12hrs**

Tableau Software Ecosystem, Toolbar Icons, Data Window and Aggregation, Connect to Data, Measure Names, Number of Records & Measures, Joining Database, Cross-tabulation, Heat Maps, Tree maps, Bar Chart, Line Chart, Area Fill Charts, Pie Chart, Scatter Plot, Circle View, Bullet Graph, Packed Bubble, Histogram, Boxplot and Gantt Chart, Sorting Data, Enhancing Views with Filters, Sets, Groups & Hierarchies.

Skill Development Activities
(These activities are only indicative, the Faculty member can innovate)

1. Understand the importance of Data Visualization in Exploratory Data Analysis and implement various graphical charts and plots through R and Tableau.
2. Deploy different visualizations such as Tables, Charts, Maps based on different datasets using Tableau.
3. Learn and implement specialized visual tools such as Dendrograms, Time Series Graphs, and Geographic Maps.
4. Understand and deploy several Graph Aesthetics, Statistical Transformations, Scales, Coordinate System, and Faceting using Tableau.
5. Creating Dashboards and Stories based on Real Time Data using Tableau Visualization Tool.

Course Outcomes

After completion of the course the students will be able to:

1. Justify the applicability of Data Visualization on Exploratory Data Analysis.
2. Design Coding by using ggplot2 library in R – Configure Graph Aesthetics, Attributes, and Plot Geoms.
3. Apply the advanced graphical attributes and configurations such as Facet Wrap, Facet Grid, Layers and Legends based on R programming.
4. Use the codes for graphical object creation based on Functions and wrap-up codes.
5. Create graphical info graphics based on Dashboards and Stories using Tableau Tool.

Reference Books

- *Wickham Hadley (2016). ggplot2: Elegant Graphics for Data Analysis. Springer*
- *Few, Stephen. (2009). Now You See It: Simple Visualization Techniques for Quantitative Analysis. Analytic Press.*
- *Chun-houh Chen, Wolfgang Hardle, Antony Unwin (2008). Handbook of Data Visualization. Springer.*
- *Wilkinson L (2005). The Grammar of Graphics, Statistics and Computing. Springer.*
- *Murray (2013). Tableau: Your Data! Wiley.*

SEMESTER- V
SKILL BASED PAPER (ELECTIVE)
SB 18FN506 : FINANCIAL MODELING

Course Objectives

The students will be able to:

1. Explain the basic and advanced features of excel in the context of financial modeling applications.
2. Apply Advanced Excel functions to present behavior of sensitivities to projected financial metrics of a firm.
3. Examine the techniques, elements and approaches of forecasting financial statements Construct models in different areas of finance including investments, corporate finance, Project finance and derivatives in Identifying the Revenue Drivers and Cost Drivers.
4. Construct simple financial models by using subroutines and Functions.
5. Justify what makes a good model and a bad one and adopt a logical, structured disciplined approach towards Advanced Financial Model building.

Module – 1: **10 Hrs**

Introduction to Understanding the Basic Features of Excel Introduction to Excel, Understanding Advanced Features of Excel-Modeling Database Functions in Excel Creating Understanding Finance Functions-Using Forms and Control Toolbox –Charts Creating Dynamic Models-present in Excel.

Module – 2: **10 Hrs.**

Sensitivity Analysis using Excel Other Sensitivity Analysis-Scenario Manager Different Statistical Distributions used in-Features, Simulation using Excel Generating Random Numbers that follow a particular distribution-Simulation Building Models in Finance using Simulation.

Module – 3: **10 Hrs**

Preparing common size statements- Excel in Accounting directly from Trial Balance Forecasting Analyzing Financial Statements by using- Financial Statements using Excel spread sheet model. Determining Project Viability -Excel in Project Appraisal Simulation in Project Appraisal- Risk Analysis in Project Appraisal

Module – 4: **10 Hrs**

Determination of Value Drivers- Excel in Valuation Risk Analysis in Valuation, Excel-DCF Valuation Creating Dynamic-Determining Efficient Portfolio in Portfolio Theory Portfolios Fixed Portfolio Insurance Black and Income Portfolio
Management using Excel, Excel in Derivatives Real Options Valuation, Building a Greeks in Excel - Scholes Model in Excel Mega Model.

Module – 5: **10 Hrs**

Understanding Subroutines and Functions and building simple financial models using subroutines and functions Subroutines and- Recording and Editing Macros Functions Message Box-Decision Rules, and Input Box Debugging.

Module – 6: Suppliers in IMC **10 Hrs**

Designing Advanced Financial Models using VBA Actual -Other Advanced Features - User Forms Model Building.

Course Outcomes

The students will be able to:

1. Illustrate the basic and advanced features of excel in the context of financial modeling applications.
2. Use Advanced Excel functions to present behaviour of sensitivities to projected financial metrics of a firm.
3. Illustrate the techniques, elements and approaches of forecasting financial statements.
4. Construct models in different areas of finance including investments, corporate finance, Project finance and derivatives in Identifying the Revenue Drivers and Cost Drivers.
5. Construct simple financial models by using subroutines and Functions.

6. Justify what makes a good model and a bad one and adopt a logical, structured and disciplined approach towards Advanced Financial Model building.

SEMESTER - VI

C5 18MC 601: INCOME TAX – II

Course objectives

The students will be able to:

1. Describe the concepts and features of assessment of profits and gains of individual proprietorship, Doctor, Advocate and Chartered Accountant as individual assessee.
2. Assess short term and long term capital gains of an Individual assessee who is involved in Business and Profession.
3. Assess taxable income from other sources of an Individual assessee after taking into account deduction u/s57 and amounts disallowed u/s58.
4. Evaluate gross total income of an Individual assessee after taking into account deduction u/s80.
5. Describe the mechanism of carry forward and set off of an Individual assessee.
6. Compute total taxable income and tax liability of an Individual assessee who is involved in Business and Profession.

Module 1: Profits & Gains of Business or Profession 16Hrs

Meaning of business–Profession–Profits of business or profession– Features of assessment of profits and gains–Rules for adjustment of profit and loss account–Depreciation u/s32.Problemsonbusiness relating to sole trader only and problems on profession relating to Doctor, Advocate and Chartered Accountant.

Module 2 : Capital Gains **12Hrs**

Meaning and kinds of capital asset – Transfer – Transactions not regarded as transfer – Full value of consideration –Cost of acquisition Cost of improvement–Capital gains exempt from tax exemptions from capital gains u/s 54. Problems on computation of short term and long term capital gains.

Module 3: Income from Other Sources **12Hrs**

General income–Specific incomes–Treatment of specific incomes– Deduction of tax at source with respect to interests, winnings, prizes etc. Problems on computation of taxable income from other sources and deduction u/s 57 and amounts expressly disallowed u/s58.

Module 4: Deductions from Gross Total Income **8Hrs**

(Provisions relating to individuals only) u/s 80- Deduction in respect of certain payments and deduction in respect of certain incomes.

Module 5: Carry forward and set off of Losses **2Hrs**

Carry forward and set off of Losses

Module 6: Tax Liability of Individuals **10Hrs**

Computation of total taxable income and tax liability of an individual.

Skill Development

(These activities are only indicative, the Faculty members can innovate)

1. Chart of capital gains index numbers.
2. Table of rates of TDS.
3. Filing of Income tax returns.
4. List of enclosures for IT returns.
5. Tax planning

Course outcomes

After completion of the course the students will be able to:

1. Illustrate the concepts and features of assessment of profits and gains of individual proprietorship, Doctor, Advocate and Chartered Accountant as individual assessee.
2. Compute short term and long term capital gains of an Individual assessee who is involved in Business and Profession.
3. Compute taxable income from other sources of an Individual assessee after taking into account deduction u/s57andamounts disallowed u/s58.
4. Compute gross total income of an Individual assessee after taking into account deduction u/s80.
5. Illustrate the mechanism of carry forward and set off of an Individual assessee who is involved in Business and Profession.
6. Compute total taxable income and tax liability of an Individual assessee who is involved in Business and Profession.

Books For Reference

- *Bhagwathi Prasad: Direct Taxes – Law and Practice, Wishwa Prakashana. Dinakar Pagare:Law and Practice of IncomeTax, Sultan Chand and Sons. Dr. Girish Ahuja & Dr. Ravi Gupta: Income Tax*
- *Dr. Mehrotra & Dr.Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication.*
- *Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann Publication.*
- *Gaur & Narang: Income Tax.*

SEMESTER – VI

C5 18 MC 602: MANAGEMENT ACCOUNTING

Course objectives

The students will be able to:

1. Describe the role of a Management Accountant in the present scenario.

2. Evaluate the financial statement analysis for strategic decision making of firm.

3. Examine the solvency, turnover/performance and Liquidity of a business by using Benchmark ratios.

4. Analyze the magnitude and pattern of sources and Application of fund under different head of account.

5. Analyze the magnitude and pattern of inflow and outflow of cash within the IFRS framework.

6. Examine the contemporary concepts in Costing and its appropriateness in usage in the present state of affairs.

Module-1:Introduction **2hrs**

Meaning – Nature and Scope of Management Accounting – Relationship between Financial Accounting – Cost Accounting and Management Accounting – Role of Management Accountant in the Present Scenario.

Module–2: Financial statement analysis **8Hrs**

Meaning and concept of Financial Analysis – Types of Financial Analysis – Methods of Financial Analysis – Problems on Comparative Statements – Common Size statements – Trend Analysis.

Module – 3: Ratio analysis **10Hrs**

Meaning – Utility and limitations – Classification of Ratios – Calculation and interpretation of Solvency – Turnover – Profitability & Liquidity ratios.

Module – 4: Funds flow analysis **12Hrs**

Meaning – Concept of Fund and Funds Flow Statement – Uses and significance of Fund Flow Statement–Procedure for preparing FFS –Schedule of changes in working capital– Statement of sources and application of funds.

Module-5: Cash flow analysis **10Hrs**

Meaning and concept–Comparison between Funds Flow and Cash Flow Statements – Uses and significance of CFS – Preparation of Cash Flow Statement as per IFRS

Module –6: Contemporary concepts **18Hrs**

Activity Based Costing; Life Cycle Costing; Target Costing; Kaizen Costing; Balanced Score Card (including problems).

Skill Development

(These activities are only indicative, the Faculty member can innovate)

1. Collection of Financial Statements of any one organization for two years.
2. Calculation of ratios based on the above financial statement: Profitability ratios – Gross Profit ratio, Net Profit ratio, ROCE, Current Ratio, Liquid Ratio.
3. Preparation of Funds Flow/Cash Flow Statements with

imaginary figure as per Accounting Standards.

4. Draft an imaginary Management Report.

5. Preparation of trend charts of a company of your choice.

Course outcomes

After completion of the course the students will be able to:

1. Illustrate the role of a Management Accountant in the present scenario.

2. Evaluate the financial statement analysis for strategic decision making of firm.

3. Examine the solvency, turnover/performance and Liquidity of a business by using live data.

4. Evaluate the magnitude and pattern of sources and Application of fund under different head of account.

5. Evaluate the magnitude and pattern of inflow and outflow of cash within the IFRS framework.

6. Justify the usage of contemporary concepts in Costing as particular type of situation/case warrants in the present state of affairs.

Books for Reference

- *Dr . S. N. Maheswari: Management Accounting.*
- *Augustin Amaladas and Mary Amala Shanthi: Corporate Financial Knowledge Integration, Himalaya publications*
- *M. Pandey: Management Accounting.*

- *Jain & Narang: Cost and Management Accounting.*
- *M. A. Sahab: Management Accounting.*
- *Prabhakara Rao: Management Accounting.*
- *R. S. N. Pillai & Bagavathi: Management Accounting.*
- *Sexana: Management Accounting.*
- *Sharma & Shashi Gupta: Management Accounting.*
- *Vinayakam: Management Accounting Tools and Techniques*

SEMESTER – VI
C5 18MC 603: OPERATIONS RESEARCH

Course Objectives

The students will be able to:

1. Describe the nature and scope of OR models and its applications for Business decision making.

2. Develop a Linear Programming model and maximization or minimization of objective function by using graphical method.

3. Solve a Linear Programming problem by using simplex or Big-M method for business decision making.

4. Solve a Transportation problem for business decision making using various methods.

5. Solve an assignment problem for business decision making by using Hungarian method.

6. Develop a project network diagram and analysis by Pert or CPM method for project management.

Module 1: Introduction to Operations Research 4 Hrs

Origin - Meaning &Definition – Methodology - Scope – O.R. Models - Features – Techniques - Limitations

Module 2: Introduction to Linear Programming 12 Hrs

Introduction – Basic Concepts in LPP – Formulation of LPP Model – Solving LPP using Graphical Method – Maximization and Minimization Model

Module 3: Simplex Method 14 Hrs

Introduction – Standard LPP form and its Basic Solutions – Slack– Surplus and Artificial variables – Simplex Algorithm – Artificial Starting Solution – Big-M Method – Minimization of LPP – Duality (Simple Problems Only)

Module 4: Transportation Problem **14 Hrs**

Introduction-Linear Programming Formulation of the Transportation Problem – Methods of Finding Initial Solution – North West Corner Method – Least Cost Method - Vogel's Approximation Method – Test for Optimality – Modified Distribution Method – Economic Interpretation - (Special Cases on Prohibited Routes, Unbalanced and Maximization) – Trans-shipment Method (Concept Only).

Module 5: Assignment Problem **8 Hrs**

Introduction – Mathematical Statement of the problem – Solution Methods of Assignment Problem – Enumeration Method – Simplex Method – Transportation Method – Solving Problems Using Hungarian Method Only.

Module 6: Network Analysis **8 Hrs**

Introduction – Network Analysis – Guidelines for construction of network diagram – Deterministic Time Estimates – Developing a Project – Network – Project Duration & Critical Path - Forward Pass – Backward Pass – Float – Probabilistic Time Estimates – Difference between PERT & CPM.

Skill Development

(These activities are only indicative, the faculty member can innovate)
1. Supply chain applications

2. Job assignment

3. Drawing network diagram for a project and identify the critical path.

4. Computation of earliest expected time and latest allowable time for events in a project.

Course Outcomes

After completion of the course the students will be able to :

1. Describe the nature and scope of OR models and its applications for Business decision making.

2. Develop a Linear Programming model and maximization or minimization of objective function by using graphical method.

3. Solve a Linear Programming problem by using simplex or Big-M method for business decision making.

4. Solve a Transportation problem for business decision making using various methods.

5. Solve an assignment problem for business decision making by using Hungarian method.

6. Develop a project network diagram and analysis by Pert or CPM method for project management.

Books for Reference

- *Budnik, Frank S Dennis Mcleaavey& Richard Mojena: Principles of Operation Research, AIT BS, New Delhi.*
- *Gould F J: Introduction to Management Science, Englewood Cliffs N J Prentice Hall.*
- *Kalavathy S: Operation Research, Vikas Pub Co.*
- *Naray J K: Operation Research, Theory and applications, McMillan, New Delhi.*
- *Richard, I. Levin & Charles A. Kirkpatrick: Quantitative Approaches to Management, McGraw Hill, Kogakusha Ltd.*
- *Sharma J K: Operation Research, Theory and Applications, McMillan, New Delhi.*
- *Srivastava V. K. et.al: Quantitative Techniques for Managerial Decision Making, Wiley Eastern Ltd.*

- *Taha Hamdy: Operations Research, Prentice Hall of India.*

SEMESTER – VI

C5 18 MC 604: COMPANY LAW AND SECRETARIAL PRACTICE

Course Objectives

The students will be able to:

1. Describe the role of Company secretary as per secretarial standard 1 and 2 under the companies' act of 2013.
2. Explain the various stages involved in the formation of company right from promotion to commencement of business stage.
3. Explain the procedure involved in raising capital by way of issue of Shares and Debentures.
4. Plan for convening the company meetings as per the compliance to manage the internal and external affairs of company.
5. Describe the duties and responsibilities of director asper compliances under Companies' Act of 2013.
6. Explain the role of official Liquidator and the procedure involved in different modes of liquidation.

Module 1: Over View of Companies Act, 2013 **6Hrs**

Overview of Company (History, types of companies) – Authorities related to company law board – Registrar of companies and SEBI (in brief) – Importance and functions (in brief) – Company Secretary: Qualification, appointment and terminations- Secretarial Standard 1 and 2 - Secretarial Audit – Compliance with law - Related Party Transactions – Who are they? - Types and Requirements of law.

Module 2: Company Formation **16**Hrs

(a) Promotion: Functions and Position of Promoters, steps in promotion, Pre-incorporation contracts and Provisional contract, Law with regard to start ups

(b) Documents to Commence Business:

Memorandum of Association: Meaning and Definition, contents, Doctrine of ultra– vires and Alteration of Memorandum

Articles of Association: Meaning, contents, alteration constructive notice and indoor management

Prospectus: Meaning, definition, importance, contents, Prospectus by implication, Shelf Prospectus, Red Herring Prospectus, Liability for misstatements and statement in lieu of prospects.

Certificate for commencement of business

Module 3 : Shares **16Hrs**

Allotment – IPO (book building process, only guidelines) – Legal provisions on allotment–Underwriting Agreements– Underwriting Commissions – Buyback of shares – Depository system (D-MAT, RE-MAT) – Transmission of Shares Members and Shareholders: Meaning of Member – Acquisition of Membership – Termination of Membership – Register of Members.

Share Capital: Meaning of Share and Stock – ESOP, Sweat equity, and Shareholders agreement- Differential voting rights– Reduction of Share Capital.

Borrowing and Debenture: Borrowing powers – Effects of Ultra Vi- res borrowings – Mortgage and charge – Debentures – Kinds of Debentures – Debenture Trust Deed - MCA 21 Guidelines

Module 4 : Company Meetings **10Hrs**

Importance of meetings – Types of meetings – Annual General Meeting and Extraordinary General Meeting – Requisites of a valid meeting–Quorum–Chairman–Adjourned Meetings– Proxies
– Voting – Different types of Resolutions - Drafting of Minutes – Requirements as per Secretarial Standard No. 1 and 2

Module 5 : Directors **6Hrs**

Need for Directors – Position of Directors – Their appointment – Retirement and removal - Powers of the Board of Directors and Shareholders - Types of Directors: Alternate, Woman, Independent Director - Duties and Responsibilities of a Director

Module 6: Winding-Up **6Hrs**

Modes of Winding up – Consequences of winding up – Official Liquidator – Defunct Company

Skill Development

(These activities are only indicative – the Faculty member can innovate)

1. Simulation with the help of BLISS Software
2. Circulate and show the prospectus to class.
3. Circulate and show the agenda to the class.
4. Draft agenda.
5. Circulate and show the directors report.
6. Circulate and show the Auditors report.
7. Collect blank share application form and make the class fill it.
8. Drafting of Memorandum of Association – Drafting Articles of Association.
9. Drafting Notice of Company Meetings – Annual – Special and Extra ordinary –Board.
10. Drafting Resolutions – different types.
11. Book building process flowchart.

Course Outcomes

After completion of the course the students will be able to:

1. Illustrate the role of Company secretary as per secretarial standard 1 and 2 under the Companies' Act of 2013.
2. Plan for formation of company right from promotion to commencement of business stage.
3. Conduct company meetings as per the compliance to manage the internal and external affairs of company.

4. Illustrate the duties and responsibilities of director as per compliances under companies' act of2013.

5. Elucidate the role of official Liquidator and the procedure involved in different modes of liquidation.

6. Illustrate the procedure involved in raising capital by way of issue of Shares and Debentures.

Books for Reference

- *K. Majumdar& G. K. Kapoor: Company Law &Practice.*
- *Avtar Singh: Principles of Company Law.*
- *Dr. P. N. Reddy & H. R.Appanaiah: Essentials of Company Law& Secretarial Practice.*
- *K. C. Garg& Vijay Gupta: Company Law & Secretarial Practice.*
- *M. C. Bhandari: Guide to Company Law Procedure.*
- *M. C. Kuchchal: Secretarial Practice.*
- *M. C. Shukla& Gulshan: Principles of Company Law.*
- *N. D. Kapoor: Company Law & Secretarial Practice.*
- *S. C. Kuchehal: Company Law & Secretarial Practice.*
- *Taxman: Company Law.*

7. *Tuteja: Company Administration and Meeting*

SEMESTER VI
ELECTIVE II: DATA ANALYTICS
PAPER III
EL 18 DA605 : Data Mining with R

Course Objectives

This course will enable students to :

1. Compare and contrast the Coding of different Machine Learning Techniques and Algorithms based on Classification and Regression Terminologies.
2. Evaluate the applicability and suitability of Algorithms so as to Cluster data based on different attribute.
3. Apply the Artificial Neural Networks to assess their performance based on several factors such as Activation Functions, Cost Function, Gradient Descent Algorithm.
4. Compare and contrast the Support Vectors based on different cases such as Linearly Separable, Non-Separable, Kernel Functions.
5. Design the Market Basket Models based on the data to understand Frequent Item Sets, Patterns and Product Popularity by using Association Rule Mining

Unit 1: Classification and Regression Tree **12 hrs**

Classification & Regression, working of a Decision Tree, Attribute Selection Measures, Information Gain, Gain Ratio, Gini Index, Building Decision Trees, CART, C5.0, and CHAID Trees, Prediction by Decision Tree, Advantages and Disadvantages of Decision Trees, Model Overfitting, Building Decision Trees in R.

Unit 2: Clustering **12 hrs**

Cluster Analysis versus Factor Analysis, Overview of Basic Clustering Methods, Agglomerative Hierarchical Clustering, Within-Group Linkage, Nearest Neighbour or Single Linkage, Furthest Neighbour or Complete Linkage, Centroid Clustering, Ward's Method, K-Means Algorithm, Dendrogram, Profiling of Cluster, Cluster Evaluation.

Unit 3: Artificial Neural Networks **12 hrs**

Structure of a Neural Network, Input Layer, Hidden Layer, Output Layer, Nodes, Synaptic Weights, Analogy with Biological Neural Network, Scaling of Data, Activation Functions, Hyperbolic Tangent, Sigmoid, Identity, Softmax, Optimization Algorithms, Scaled Conjugate Gradient, Gradient Descent, Model Accuracy.

Unit 4: Support Vector Machine **12 hrs**

Decision Boundaries for Support Vector Machine, Maximum Margin Hyperplanes, Structural Risk Minimization, Linear SVM-Separable Case, Linear SVM-Non-Separable Case, Kernel Function, Kernel Trick, Kernel Hilbert Space, Model Evaluation.

Unit 5: Market Basket Analysis **12hrs**

Market Basket Analysis and Association Analysis, Market Basket Data, Stores, Customers, Orders, Items, Order Characteristics, Product Popularity, Tracking Marketing Interventions, Association Rules, Support, Confidence, Lift, Chi-Square Value, Sequential Pattern Analysis.

Skill Development Activities

(These activities are only indicative, the Faculty member can innovate)

1. Using R language to Import, Export data and perform Exploratory Data Analysis based on Datasets.
2. Understand, Conceptualize and Implement different Classification and Regression Techniques using R Language.
3. Employ and implement Decision Trees Classification based on a Dataset.
4. Effectively use a number of popular and contemporary Data Mining methods such as: Regression, Support Vectors, Cluster Analysis Techniques.
5. Perform a Market Basket Analysis based on Market Data using R.

Course Outcomes

After completion of the course the students will be able to:

1. Analyze the Decision Trees Algorithms based on Classification and Regression Techniques.
2. Justify the use of Dendrograms to evaluate Clustering Algorithms, Nearest Neighbor Models, Linkage, Cluster Profiling.
3. Examine the fundamental theory and concepts of Neural Networks and applicability and implications of use of NN Paradigms and its Activation Functions.
4. Examine the applicability and use of Kernel Trick in SVMs in the context of Separable/Non-Separable Cases
5. Relate the Market Basket Algorithm with the Use of Association Rules, Apriori Algorithm to find frequent item sets.

Reference Books

- Han, Jiawei and Kamber, Micheline. (2012). *Data Mining: Concepts and Techniques*. Morgan Kaufman Publishers.
- Tang, P.N., Steinback, M. and Kumar, V. (2014). *Introduction to Data Mining*. Pearson.
- Myatt, Glenn and Johnson, Wayne. (2009). *Making Sense of Data II*. Wiley.
- Anand Rajaraman. (2011). *Mining of Massive Datasets.* Cambridge University Press.
- Mitchell (2013). *Machine Learning*. McGraw Hill.

SEMESTER VI
ELECTIVE II: DATA ANALYTICS
PAPER IV
EL 18 DA 606:Text Mining

Course Objective

This course will enable students to :

1. Evaluate the applicability and suitability of the Text Analytics and its concepts based on unstructured Data.
2. Perform Word Tokenization, Stemming, Lemmatization and Tag different Parts of Speech so as to perform analysis on the textual data.
3. Justify the Extract Features, Relations from Texts by implementing algorithms based on Term Frequency, Inverse Document Frequency, Zipf's Law.
4. Evaluate the applicability and suitability of Categorize and Cluster Words based on Bi-Gram, N-Gram Analysis.
5. Apply the Topic Modelling and Information Extraction based on Latent Dirichlet Allocation, Hidden Markov Models and Context Free Grammar.

Unit 1: Introduction to Text Mining **12 hrs**

Basics of Text Mining, Natural Language Content Analysis, Core Text Mining Operations, Associations, Using Background Knowledge for Text Mining, Domain Ontologies, Domain Lexicons. Text Mining Pre-processing Techniques, Task Oriented Approaches, NLP Tasks, Tokenization, Part-of-Speech Tagging, Syntactical Parsing and Shallow Parsing.

Unit 2: Extracting Features, Relations from Text **12hrs**

Finding Implicit Features, Finding Opinion Phrases and their Polarity, Context-Specific Word Semantic Orientation, Analysis of Word and Document Frequency, tf-idf, Zipf's Law, bind tf_idf Function, Subsequence Kernels for Relation Extraction, Capturing Relation Patterns with a String Kernel.

Unit 3: Text Categorization and Clustering **12hrs**

Applications of Text Categorization, Document Representation, Knowledge Engineering Approach to Text Categorization, Machine

Learning Approach to Text Categorization, Evaluation of Text Classifiers. Clustering Tasks in Text Analysis, Clustering Algorithms and Clustering of Textual Data.

Unit 4: Relationships between Words: 12hrs

Tokenizing by N-gram, Counting and Filtering N-gram, Analysing Bigrams to provide Context in Sentiment Analysis, visualizing a Network of Bigrams using ggraph, Counting and Correlating Pairs of Words with the widyr Package, Counting and Correlating among Sections, Examining Pairwise Correlation.

Unit 5: Topic Modelling and Probabilistic Models for Information Extraction 12hrs

Latent Dirichlet Allocation, Word Topic Probabilities, Per-Document Classification, By-words Assignments, Alternative LDA Implementations. Hidden Markov models, Stochastic Context Free Grammar, Conditional Random fields, Parallel Learning Algorithms.

Skill Development Activities

(These activities are only indicative, the Faculty member can innovate)

1. Understand, implement and employ Natural Language Processing and various steps under it such as: Stemming, Lemmatization, POS Tagging, Chunking.
2. Analyze Word and Document Frequency for a Textual Data by understanding tf-idf, Zipf's Law.
3. Perform N-Gram Tokenization, Topic Modelling, Information Extraction based on Positive, Negative and Neutral Textual Data.
4. Employ the use of different Classification and Clustering Algorithms on Textual Data.
5. Deploy a Twitter Sentiment Analyzer using Text Analytics with R.

Course Outcomes

After completion of the course, the students will be able to:

1. Evaluate the applicability and suitability of the concepts pertaining to Natural Language Processing such as Text Preprocessing, Parts of Speech Tagging, Tokenization using R in the context of Text Mining.

2. Compare and contrast the applicability of Text mining models which are able to Extract Features and Relations from Textual Unstructured Data.
3. Conduct the Text Categorizing and Clustering by using different algorithms and models.
4. Use the Filter, Tokenize, Count and Relate Words based on Bi-grams, N-Grams and statements so as to build Sentiment Analyzers.
5. Conduct Topic Modelling and Information Extraction using Latent Dirichlet Allocation, Word Topic Probabilities and Document Classifiers.

Reference Books

- Julia Silge and David Robinson (2018): *Text Mining with R, A Tidy Approach*. O'Reilly
- Matthew L. Jockers (2014). *Text Analysis with R for students of literature*. Springer.
- James Pustejovsky, Amber Stubbs (2012). *Natural Language Annotation for Machine Learning*. O'Reilly.
- James Sanger, Ronen Feldman (2002). *The Text Mining Handbook: Advanced Approaches in Analyzing Unstructured Data*. Cambridge.
- Steve R. Poteet (2007). *Natural Language Processing with Text Mining*. Springer.