

# **St. Joseph's College of Commerce**

(Autonomous)

163, Brigade Road, Bengaluru - 560 025

Accredited with 'A++' Grade (4<sup>th</sup> Cycle) by the  
National Assessment and Accreditation Council (NAAC)

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



## **Bachelor of Commerce - Honours (Analytics)**

**Semester III & IV**

*Syllabus as per National Education Policy 2020*

*Curriculum Framework w.e.f., 2021-2022*

**Academic Year 2022 - 2023**

## **St. Joseph's College of Commerce**

(An Autonomous Institution affiliated to Bengaluru City University)

St. Joseph's College of Commerce (SJCC) was formerly a part of St. Joseph's College, established in the year 1882. The college management was later transferred to the Jesuits. The Commerce Department was established in the year 1949 and it became an independent college with its own building in Brigade Road in the year 1972.

The college has in its Vision a model for higher education which encourages individuals to dream of a socially just world and in its Mission a strategy to empower individuals in realizing that dream.

With an objective of imparting quality education in the field of Commerce and Management, the college has been innovating in all aspects of higher education over a long period of time. These innovations were further bolstered with the granting of autonomous status to the college by UGC in September 2005. From then on, the college has taken a lead in reforming curriculum and syllabus, examination and evaluation pattern and teaching and learning methods through the Board of Studies, the Academic Council and the Governing Council comprising of eminent academicians, industry representatives and notable alumni.

The college has undergone four cycles of NAAC accreditation starting from the year 2000 in which it secured 'five stars', next in the year 2007 an 'A' grade, in the year 2012 again an 'A' grade and recently in February 2021 an 'A++'. It is one of the very few institutions in the country to have secured A++ grade in the fourth cycle under the Revised Accreditation Framework (RAF) and the first college in Karnataka to do so. The college was declared as a 'College with Potential for Excellence' in the year 2010. In 2011, SJCC was recognized as a Research Centre by Bangalore University. The college has been ranked 74<sup>th</sup> in the National Institutional Ranking Framework (NIRF) ratings of Ministry of Education, Government of India, in 2021 and it has been the only institution from Karnataka to make it consistently to the top 100 in the country.

The college offers diverse Honours programmes in Commerce and Business Administration. Under Commerce Studies it offers B.Com, B.Com (Professional- International Accounting and Finance), B.Com (BPM- Industry Integrated), B.Com (Travel and Tourism), B.Com (Analytics), B.Com (Professional - Strategic Finance), M.Com (Finance & Taxation/ Marketing & Analytics), M.Com (International Business) & M.Com (Financial Analysis). Under Business Administration it offers BBA, BBA (Entrepreneurship) and BBA (Professional- Finance and Accountancy). The college also offers six one-year Post Graduate Diploma programmes.

### **ABOUT THE DEPARTMENT**

The B. Com Department of St. Joseph's College of Commerce has efficiently streamlined all its courses to reflect an interdisciplinary approach to understanding the contemporary business environment. Its aim is to construct a strong foundation in core subjects such as Accounting, Taxation, Economics, Statistics, Auditing along with a choice of Cost Accounting, Finance, Business Analytics, Marketing and Human Resources, studied in the fifth and sixth semester. The courses are challenging, yet, rewarding for students with high aspirations. Our students have been sought after by employers for their excellent knowledge, skills and attitude, giving them an edge over their peers from other institutions. The B.Com Programme of the college is rated amongst the top 10 in the country. (India Today, AC Nielson Survey 2016).

## OBJECTIVES OF THE B.COM (HONOURS) PROGRAMME

1. To provide conceptual knowledge and application skills in the domain of Commerce studies.
2. To provide knowledge in all the areas of business to be able to meet expectations 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.

## Salient Features of four - year Bachelor of Commerce Programme with Multiple Entry and Exit Options

1. The regulations governing the four-year Bachelor of Commerce Programme with Multiple Entry and Exit Options shall be applicable with effect from the Academic year 2021-2022.

2. The Bachelor of Commerce Programme shall be structured in a semester mode with multiple exit options:

<b>Certificate in Commerce</b>	on the completion of <b>First year</b> ( <i>two semesters</i> )
<b>Diploma in Commerce</b>	on the completion of <b>Second Year</b> ( <i>four semesters</i> )
<b>Basic Bachelor Degree</b>	on the completion of <b>Third Year</b> ( <i>six semesters</i> )
<b>Bachelor Degree with Honours</b>	on the completion of <b>Fourth Year</b> ( <i>eight semesters</i> )

3. The four-year undergraduate honours degree holders with research component and a suitable grade are eligible to enter the **Doctoral Programme** in a relevant discipline.
4. The students who exit with Certification, Diploma or Basic Bachelor Degree shall be eligible to re-enter the programme at the exit level to complete the programme or to complete the next level.
5. The four-year Bachelor of Commerce Programme offers a wide range of multidisciplinary courses with exposure to other disciplines, specializations and areas. The programme aptly caters to knowledge, ability, vocational, professional and skill enhancement along with focus on humanities, arts, social, physical and life sciences, mathematics, sports etc.
6. The four-year Bachelor of Commerce Programme combines conceptual

understanding with practical engagement through lab courses, national and international field visits, internship, conferences, workshops, seminars, case study analysis, group discussions and research projects.

7. A wide range of *Skill Enhancement Courses* are offered in the first four semesters to enhance language and communication, logical reasoning, critical thinking, problem solving, data analytics and life skills.
8. In each of the first four semester students will have an option of studying a course from other disciplines. Students will be given an option to choose from a pool of *Open Elective Courses* that provide exposure to multiple disciplines and thereby making the programme truly multi-disciplinary.
9. Students can make a choice of a *specialization/elective* in the 3<sup>rd</sup> and the 4<sup>th</sup> year of the programme.

#### I. ELIGIBILITY FOR ADMISSION

Candidates who have completed the two-year Pre-University course of Karnataka State or its equivalent are eligible for admission into this Programme.

#### II. DURATION OF THE PROGRAMME

The duration of the undergraduate degree programme is *four years* (eight semesters) with multiple entry and exit options, within this period. The students can exit after the completion of *one* academic year (two-semester) with a *Certificate* in the discipline; *Diploma* after the study of *two* academic years (four Semesters) and *Basic Bachelor Degree* after the completion of *three* academic years (six Semesters). The successful completion of *Four - Year* undergraduate Programme would lead to *Bachelor Degree with Honours in the discipline*.

#### 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 course in the manner stated above shall not be permitted to take the End Semester Examination.

#### V. SUBJECTS OF STUDY: THE COMPONENTS OF CURRICULUM FOR FOUR-YEAR MULTIDISCIPLINARY UNDERGRADUATE B.COM PROGRAMME

The Category of courses and their descriptions are given in the following table:

Category of courses	Objectives/ Outcomes
Languages	Language courses equip students with communication skills, critical and creative thinking, familiarity with issues pertaining to society and culture and skills of expression

	and articulation. They also provide students with a foundation for learning other courses.
<b>Ability Enhancement Courses</b>	Ability enhancement courses are the generic skill courses that enable students to develop a deeper sense of commitment to oneself and to the society and nation largely.
<b>Skill Enhancement Courses</b>	Skill Enhancement Courses enhance skills pertaining to a particular field of study to increase their employability/self-employment. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.
<b>Vocational Enhancement courses</b>	Vocational Enhancement courses enhance skills pertaining to a particular field of study to increase their employability/ self- employment.
<b>Foundation/ Discipline based Introductory Courses</b>	These courses will supplement in a better understanding of how to apply the knowledge gained in classrooms to societal issues.
<b>Major Discipline Core Courses</b>	Major Discipline Core Courses aim to cover the basics that a student is expected to learn in that particular discipline. They provide fundamental knowledge and expertise to produce competent and creative graduates with a strong scientific, technical and academic acumen.
<b>Major Discipline Elective Courses</b>	These courses provide more depth within the discipline itself or within a component of the discipline and provide advanced knowledge and expertise in an area of the discipline.
<b>Open or Generic Elective Courses</b>	Open or Generic Elective Courses are courses chosen from an unrelated discipline/ subject, with an intention to seek exposure beyond discipline/s of choice.
<b>Project work/ Dissertation/ Internship/ Entrepreneurship</b>	Students shall carry out project work on his/her own with an advisory support by a faculty member to produce a dissertation/ project report. Internship/ Entrepreneurship shall be an integral part of the Curriculum.
<b>Extension Activities</b>	As part of the objective of Social Concern, the College has designed a well-structured Community Outreach programme of sixty hours called 'Bembala' (Support). The programme includes rural camps, workshops, lectures and seminars, teaching programme in Govt Schools or Colleges, community service in slums and villages, awareness programme in streets, localities, slums or villages and public rallies on social issues. The College expects the students to be part of the activities organized by the College towards securing the goal of Social Concern. This programme is mandatory for the award of degree from the college.

<b>Extra/Co-curricular Activities</b>	The College has a wide range of student associations and clubs that provide space for students to develop their creative talents. The activities conducted help in developing not just the artistic and entrepreneurial talents but also helps in character building, spiritual growth, physical growth, etc. They facilitate development of various domains of mind and personality such as intellectual, emotional, social, moral and aesthetic developments. Creativity, enthusiasm, and positive thinking are some of the facets of personality development and the outcomes of these activities.
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## VI. CREDIT REQUIREMENT

Credits represent the weightage of a course and are a function of teaching, learning and evaluation strategies such as the number of contact hours, the course content, teaching methodology, learning expectations, maximum marks etc.

<b>Exit Option</b>	<b>Minimum Credit Requirement*</b>
Certificate in Commerce	50
Diploma in Commerce	100
Basic Bachelor Degree	148
Bachelor Degree with Honours	190

\*Credits are subject to change as per the NEP guidelines

## VII. TEACHING & EVALUATION

M.Com/MBA/MFA/MBS/MTA graduates with B.Com, B.B.A & B.B.S as basic degree from a recognized university are only eligible to teach and to evaluate the courses including part - B courses of I and II semesters (except languages, compulsory additional courses and core Information Technology related courses) mentioned in this regulation. Languages and additional courses shall be taught by the graduates as recognized by the respective board of studies.

## VIII. EXAMINATION & EVALUATION

### **CONTINUOUS FORMATIVE EVALUATION/INTERNAL ASSESSMENT:**

Total marks for each course shall be based on continuous assessment and semester end examinations. As per the decision taken at the Karnataka State Higher Education Council, the total marks for CIA and ESE as per NEP will be 40:60.

<b>TOTAL MARKS FOR EACH COURSE</b>	<b>100%</b>
Continuous Internal assessment - <b>CIA 1</b>	20% marks
Continuous Internal assessment - <b>CIA 2</b>	20% marks
End Semester Examination ( <b>ESE</b> )	60% marks

## **EVALUATION PROCESS OF INTERNAL ASSESSMENT MARKS SHALL BE AS FOLLOWS:**

- a) The first component (CIA 1) of assessment is for 20% marks. The second component (CIA 2) of assessment is for 20% marks.
- b) During the end of the semester, end semester examination shall be conducted by the college for each course. This, forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
- c) The students shall be informed about the modalities well in advance. The evaluated assignments during component I (CIA 1) and component II (CIA 2) are immediately provided to the students.
- d) The marks of the total internal assessment shall be published on the ERP for students at the end of semester.
- e) The internal assessment marks shall be submitted to the COE as per the date mentioned.
- f) There shall be no minimum in respect of the internal assessment marks.
- g) Internal assessment marks may be recorded separately. A student who has failed, shall retain the internal assessment marks as there will be no change in the CIA results scored.

## **MINIMUM FOR A PASS**

- a. A student needs to get 40% in the end semester examination and in addition the student also should get an aggregate of overall 40% inclusive of his internal assessment to be declared as passed.
- b. The student who is passed in all the end semester examinations in the first attempt is eligible for rank.
- c. A student who passes the semester examinations in parts or attempted supplementary exams is eligible for only Class and CGPA but not for ranking.
- d. The results of students who have passed the last semester examinations but not passed the lower semester examinations shall be eligible for the degree only after completion of all the lower semester examinations.
- e. If a student fails in a subject, either in theory or practical's he/she shall appear for that subject only at any subsequent regular examination, as prescribed for completing the programme. He/she must obtain the minimum marks for a pass in that subject (theory and practical's separately) as stated above.

## **CARRY OVER**

Students who fail in lower semester examinations may go to the higher semesters and take the lower semester examinations as per odd or even semester in the next consecutive chance.

## **CLASSIFICATION OF SUCCESSFUL CANDIDATES**

The ten-point grading system is adopted. The declaration of result is based on the Semester Grade Point Average (SGPA) earned towards the end of each semester or the Cumulative Grade Point Average (CGPA) earned towards the completion of all the eight semesters of the programmes and the corresponding overall grades. If some students exit at the completion of the first, second or third year of the four year

Undergraduate Programmes, with Certificate, Diploma or the Basic Degree, respectively, then the results of successful candidates at the end of second, fourth or sixth semesters shall also be classified on the basis of the Cumulative Grade Point Average (CGPA) obtained in the two, four, six or eight semesters, respectively. For award of;

- Certificate in Business Commerce
- Diploma in Business Commerce
- Basic Bachelor's Degree in Business Commerce
- Bachelor's Degree with Honours in a Discipline

#### **TRANSFER FOR ADMISSION**

Transfer for admission is permissible only for odd semesters for students of other universities and within the university.

#### **CONDITIONS FOR TRANSFER OF ADMISSION OF STUDENTS WITHIN THE UNIVERSITY**

- a. His/ her transfer admission shall be within the intake permitted to the college.
- b. Availability of same combination of subjects studied in the previous college.
- c. He/she shall fulfill the attendance requirements as per the University Regulation.
- d. He/she shall complete the programme as per the regulation governing the maximum duration of completing the programme.

#### **CONDITIONS FOR TRANSFER ADMISSION OF STUDENTS OF OTHER UNIVERSITIES**

- a. A Student migrating from any other University may be permitted to join odd semester of the degree programme provided he/she has passed all the subjects of previous semesters/years as the case may be. Such candidates must satisfy all other conditions of eligibility stipulated in the regulations of the University.
- b. His/her transfer admission shall be within the intake permitted to the college.
- c. He/she shall fulfill the attendance requirements as per the University Regulation.
- d. The student who is migrating from other Universities is eligible for overall SGPA/CGPA or Class and not for ranking.
- e. He/she shall complete the programme as per the regulation governing the maximum duration of completing the programme as per this regulation.

### **Outcome Based Education (OBE)**

#### **B.Com - Honours (Analytics)**

Our **B.Com - Honours (Analytics)** program will produce graduates who will:

**PEO1:** Be competent, creative and highly valued professionals in industry, academia, or government.



**PEO2:** Adapt to a rapidly changing environment with newly learnt and applied skills and competencies, become socially responsible and value driven citizens, committed to sustainable development.

**PEO3:** Act with conscience of global, ethical, societal, ecological and commercial awareness with sustainable values as is expected of professionals contributing to the country.

**PEO4:** Able to continue their professional development by obtaining advanced degrees in accounting and other professional fields.

### **Programme Outcomes (PO)**

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

#### **PO1: Disciplinary and Inter - disciplinary Knowledge**

**Demonstrate** the **understanding** of relevant business, management and organization knowledge, both academic and professional, in line with industry standards.

#### **PO2: Decision Making Skill**

**Apply** underlying concepts, principles, and techniques of analysis, both within and outside the discipline to generate all the possible solutions and picks one that shows their understanding of the problem and the outcomes.

#### **PO3: Integrated Problem-solving and Research**

**Analyze** how parts of a whole interact with each other to produce overall outcomes in complex systems by analyzing key managerial issues in a particular industry or company and propose appropriate managerial solutions to the situation.

#### **PO4: Critical Thinking Skill**

**Evaluate** evidence, arguments, claims and beliefs by using right type of reasoning as appropriate to the situation and **Analyze** how parts of a whole interact with each other to produce overall outcomes in complex systems.

#### **PO5: Creative Thinking Skill**

**Develop**, implements and communicates new and worthwhile ideas using both incremental and radical concepts to make a real and useful contribution to their work.

#### **PO6: Usage of Modern Technology and Tools**

**Use** tools and technologies of digital nature, communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy.

#### **PO7: Leadership and Team work**

**Develop** a vision, translate that vision into shared goals, and effectively work with others to achieve these goals.

#### **PO8: Ethical Conduct & Sustainability Practices**

**Act** responsibly and sustainably at local, national, and global levels.

**PO9: Collaboration & Networking Skill**

**Work** collaboratively and respectfully as members and leaders of diverse teams.

**PO10: Self-directed and Life - long Learning**

**Create** goals and monitor progress toward them by developing an awareness of the personal, environmental and task-specific factors that affect attainment of the goals.

**Programme Specific Outcomes (PSOs)**

**PO 11: Developing analytical model**

Develop models to identify and evaluate complex business challenges by analysing data using analytical techniques and visualising tools.

**PO12: Application of analytical model**

Apply appropriate analytical methods into the core business operations and to leverage data to cultivate and nourish informed decision-making.

**B.COM Honours (Analytics)**

**PROGRAMME MATRIX AS PER NATIONAL EDUCATION POLICY**

Course Category	I	II	III	IV	V	VI	VII	VIII	TOTAL
<b>Part A : Ability Enhancement Complusory Courses</b>									
<b>Language</b> 3 Hrs/3 Cr	Lan 1	Lan 1	Lan 1	Lan 1	-	-	-	-	
	Lan 2	Lan 2	Lan 2	Lan 2	-	-	-	-	
<b>Compulsory Course</b> 2 Hrs/2 Cr	-	Environmental Studies	-	Indian Constitution	-	-	-	-	
<b>I</b>	<b>6 Cr</b>	<b>8 Cr</b>	<b>6 Cr</b>	<b>8 Cr</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>28</b>
<b>Part B: Core Courses</b>									
<b>Discipline Specific Core</b> 4 Hrs/4 Cr	Financial Accounting	Corporate Accounting	Financial Management	Theory and Practice of Banking	Income Tax -I	Income Tax II	Corporate Tax	Design Thinking for Innovation	
	Business Statistics - I	Business Statistics - II	Marketing Management	Human Resource Management	Cost Accounting	Management Accounting	Principles and Practices of Auditing	Behavioural Finance	
	Principles of Management	Business Economics	Programming for Analytics	Business Statistics with R Programming	Data Visualization	Data Mining with R	Emotional Intelligence for Managerial Effectiveness	Portfolio Management and Analysis	
<b>Open Electives Course (OEC)</b> 3 Hrs/ 3 Cr	Choice of Course	Choice of Course	Choice of Course	Choice of Course	-	-	-	-	
<b>Discipline Specific Elective</b> 3 Hrs/3 Cr	-	-	-	-	Elective Paper - Multivariate Data Analysis	Elective Paper - Text Mining	Elective - Cloud Computing	Elective Paper (Optional) - Big Data Analysis	
	-	-	-	-	-	-	-	Elective Paper (Optional)	
<b>SEC - SB</b> 2 Cr	Digital Fluency	-	Artificial Intelligence	-	Choice of Course	Choice of Course	-	-	
<b>VEC</b> 3 Cr	-	-	-	-	Choice of course	Choice of course	Choice of course	Choice of course	
<b>Research Methodology</b> 3 Cr	-	-	-	-	-	-	Research Methodology	-	
<b>Internship</b> 2 Cr	-	-	-	-	Internship 1	Internship 2	-	-	
<b>Research Project/Internship</b> 6 Cr	-	-	-	-	-	-	-	Research Project/Internship (Optional)	
<b>II</b>	<b>17 Cr</b>	<b>15 Cr</b>	<b>17 Cr</b>	<b>15 Cr</b>	<b>22 Cr</b>	<b>22 Cr</b>	<b>21 Cr</b>	<b>21 Cr</b>	<b>150</b>
<b>Part C: Skill Enhancement Course - Value Based</b>									
<b>Foundation Course Extension and Extracurricular Activities</b> 2 Cr	Psychological Well being	Extension Activities 1 Cr	Yoga	Extension Activities 1 Cr	Extension Activities 1 Cr	Extension Activities 1 Cr	1	-	-
		Extracurricular Activities 1 Cr		Extracurricular Activities 1 Cr	Extracurricular Activities 1 Cr	Extracurricular Activities 1 Cr	1	-	-
<b>III</b>	<b>2 Cr</b>	<b>2 Cr</b>	<b>2 Cr</b>	<b>2 Cr</b>	<b>2 Cr</b>	<b>2 Cr</b>	<b>-</b>	<b>-</b>	<b>12</b>
<b>Total</b>	<b>25 Cr</b>	<b>25 Cr</b>	<b>25 Cr</b>	<b>25 Cr</b>	<b>24 Cr</b>	<b>24 Cr</b>	<b>21 Cr</b>	<b>21 Cr</b>	<b>190</b>
<b>Exit Option</b>	<b>Certification in Commerce</b>		<b>Diploma in Commerce</b>		<b>Basic Bachelors Degree</b>		<b>Bachelors Degree with Honours</b>		

## Bachelor of Commerce

### (Analytics)

#### Semester Structure as per National Education Policy

#### SEMESTER III

SL. No.	Course Code	Title of the Course	Category of Course	Teaching Hour per Week (L+T+P)	ESE	CIA	Total Marks	Credits
1	<b>Language 1</b>		AECC	3+1+0	60	40	100	3
	C5 21 KN 301	Kannada						
	C5 21 HN 301	Hindi						
	C5 21 AE 301	Additional English						
2	<b>Language 2</b>		AECC	3+1+0	60	40	100	3
	C5 21 GE 301	General English						
3	C5 21 DC 301	Financial Management	DSC-4	3+1+2	60	40	100	4
4	C5 21 DC 302	Marketing Management	DSC-5	4+0+0	60	40	100	4
5	C5 21 DC 303	Programming for Analytics	DSC-6	4+0+0	60	40	100	4
6		Open Electives*	OEC-2	3+1+0	60	40	100	3
7	C5 21 SB 301	Artificial Intelligence in Accounting and Auditing	SEC-SB	1+0+2	30	20	50	2
8	UG 21 FC 301	Yoga	SEC-VB	1+0+2	-	-	50	2
<b>SUB TOTAL (A)</b>					<b>390</b>	<b>310</b>	<b>700</b>	<b>25</b>

\* Open Elective Courses are courses from an unrelated discipline/ subject, with an intention to seek exposure beyond discipline/s of choice.

**Bachelor of Commerce  
(Analytics)**

**Semester Structure as per National Education Policy**

**SEMESTER IV**

SL. No.	Course Code	Title of the Course	Category of Course	Teaching Hour per Week (L+T+P)	ESE	CIA	Total Marks	Credits
1	<b>Language 1</b>		AECC	3+1+0	60	40	100	3
	C5 21 KN 401	Kannada						
	C5 21 HN 401	Hindi						
	C5 21 AE 401	Additional English						
2	<b>Language 2</b>		AECC	3+1+0	60	40	100	3
	C5 21 GE 401	General English						
3	UG 21 CC 401	Indian Constitution	AECC	1+1+0	30	20	50	2
4	C5 21 DC 401	Theory and Practice of Banking	DSC-4	3+1+2	60	40	100	4
5	C5 21 DC 402	Human Resource Management	DSC-5	4+0+0	60	40	100	4
6	C5 21 DC 403	Business Statistics with R Programming	DSC-6	4+0+0	60	40	100	4
7		Open Electives***	OEC-2	3+1+0	60	40	100	3
8	UG 21 EA 401	Extension Activities	SEC-VB	0+0+2	-	25	25	1
9	UG 21 EC 401	Extra-Curricular Activities	SEC-VB	0+0+2	-	25	25	1
SUB TOTAL (A)					390	310	700	25

\*\*\* Open Elective Courses are courses from an unrelated discipline/ subject, with an intention to seek exposure beyond discipline/s of choice.

**SEMESTER - III**  
**C5 21 DC 301: FINANCIAL MANAGEMENT**

**COURSE OBJECTIVES**

The course is devised with an aim to familiarize the students with the basic theories and practices of funding, allocating and managing financial resources of the firm.

**Module - 1: Financial Management** **4 Hrs**

Finance Function – Aims of Finance Function – Financial Management  
- Goals of Financial Management – Financial Decisions. Importance of Sustainable finance-  
**Environmental , Social , Governance (ESG)** , Business ethics- integrity- security and information for finance managers. Use of technology in finance.

**Module - 2: Financing Decisions: Cost of Capital** **12 Hrs**

Meaning – Computation of Cost of Capital – Cost of Equity  
- Preference – Debt - Cost of Retained Earnings – Weighted Average Cost of Capital and Marginal Cost of Capital.

**Module - 3: Financing Decisions: Capital Structure** **10 Hrs**

Meaning of Capital Structure – Optimum Capital Structure – Factors determining Capital structure – Leverages - Operating leverage – Financial leverage and combined leverage – Problems - Point of Indifference.

**Module - 4: Investment Decisions** **16 Hrs**

Capital Budgeting – Meaning – Significance – Capital Budgeting process – Payback period – ARR – Net present values – IRR Method – Profitability Index and Capital Rationing (Concept only).

**Module-5 : Dividend Decisions** **8 Hrs**

Meaning – Types of dividend policies – Factors influencing dividend policy – Forms of dividends. Dividend relevance theories – Walter’s Model and Gordon’s Model. Dividend irrelevance theories  
- Modigliani Miller Model.

**Module-6 : Working capital management** **10 Hrs**

Working capital: Meaning – Concepts of working capital – Factors influencing Working Capital requirement – Components of working capital – Profitability/Liquidity tradeoff. Working capital – Investment policy – Financing policy

Cash Management: Meaning – Importance – Factors affecting cash balances – Motives of holding cash – Objectives of cash management – Difficulties and Means of cash management.

Receivables Management: Meaning – Purpose – Determinants – Tools for receivables management – Ageing schedule.

Inventory Management: Meaning and Importance – Cost of holding inventory – Tools – EOQ – Fixing different inventory levels – ABC analysis – FSN – VED – JIT – Periodic

inventory valuation – Perpetual inventory valuation (concepts only).

### **Skill Development**

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

1. Role Play as a Finance Manager in a given decision making situation.
2. Prepare a Capital Budget for your new Business.
3. Evaluate the NPV of an investment made in any one of the capital projects with imaginary figures for 5 years.
4. Prepare an aging schedule of debtors with imaginary figures.
5. Analyse the Capital Structure of companies in different industries.
6. Compare & Contrast various dividend policy practices of certain companies in India.

### **COURSE OUTCOMES**

After the Course the students will be able to:

1. Describe both theoretical and practical role of financial manager in business corporations.
2. Compute the cost of capital of specific sources of capital and the overall cost of capital.
3. Design an optimum capital structure for an hypothetical firm.
4. Evaluate investment decisions by using capital budgeting techniques.
5. Analyze the implication of dividend policy of a listed company with live financials.
6. Evaluate the role of working capital management in meeting firm's strategic objectives and its value creation.

### **Books for Reference**

- ❖ *I. M. Pandey: Financial Management, Vikas Publishers, New Delhi.*
- ❖ *James C. Vanhorne: Financial Management.*
- ❖ *Khan & Jain: Financial Management, Tata Mcgraw Hill, NewDelhi.*
- ❖ *P. N. Reddy & Appanaiah: Financial Management, Himalaya Publishers, Bombay.*
- ❖ *Prasanna Chandra: Financial Management, Tata McGraw Hill, New Delhi.*
- ❖ *S. N. Dorai Raj: Financial Management, Kalyani Publishers, New Delhi.*
- ❖ *S. N. Maheswari: Financial Management, Sulchand & Co., New Delhi.*
- ❖ *Sharma & Sashi Gupta: Financial Management.*

**SEMESTER - III**  
**C5 21 DC 302: MARKETING MANAGEMENT**

**COURSE OBJECTIVES**

The course aims to enable students to understand the elements and strategies of marketing and to expose them to the latest trends in marketing.

**Module - 1: Introduction to Marketing** **8 Hrs**

Definition - Nature - Scope - Importance - Concepts - Functions - Micro and Macro environment - Meaning and difference - Marketing Management - Meaning & functions. Use of Artificial Intelligence and Augmented reality in marketing and achieving sustainability

**Module - 2: Market Segmentation, Targeting & Positioning** **8 Hrs**

Marketing Mix (elements) Basis - Prerequisites for sound segmentation - Target marketing strategies - Product positioning, meaning and steps involved.

**Module - 3: Consumer Behaviour** **8 Hrs**

Meaning of consumer behaviour - Factors influencing Consumer behaviour - Buying decision process and its stages.

**Module - 4: Product & Pricing** **18 Hrs**

Product mix - Product Life Cycle - New product development - Branding & Packing - Meaning - Types - Advantages and disadvantages - Objective of pricing - Factors influencing pricing decisions - Methods of pricing and pricing strategies.

**Module - 5: Channel of Distribution & Promotion** **8 Hrs**

Factors affecting choice of channel - Channel design decision - Channel Management. Promotion - Meaning - Promotion mix - Selection of media - Advertisement copy - Evaluation of advertising - Personal selling - Sales Promotion.

**Module - 6: Ethical Aspects and Recent Trends in Marketing** **10 Hrs**

Marketing Ethics and Consumer Rights - Socially responsible Advertising - Ethics and regulation in Product - Pricing - Packaging and Labelling. E-Business - Tele-Marketing - M-Business - Relationship marketing - Retailing - concept marketing and virtual marketing (concepts only). Ethics and sustainable consumption

**Skill Development**

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

1. Identify the producer of your choice and describe in which stage of the product life cycle it is positioned.
2. Strategize policy for development of a new product/ existing product in a new market.
3. Select a producer and describe an advertising endeavour for it, since its introduction.
4. Conduct a survey to study Consumer Behaviour for a product of your choice.



5. Develop an Advertisement copy for a product.
6. Prepare charts for distribution network for different products.

### **COURSE OUTCOMES**

After the Course the students will be able to:

1. Describe the concept of marketing in theory and practice.
2. Examine segmentation and learn different ways of selecting the appropriate target and positioning the product in the market.
3. Analyze the factors that determines the consumer behavior in buying decision.
4. Prepare business plans by understanding the process and principle of new product development, product-mix, branding, pricing strategies and packaging.
5. Interpret the factors affecting channel distribution decisions and decision affecting the promotion.
6. Apply ethical practices in marketing and explain the recent trends in marketing.

### **Books for Reference**

- ❖ *Armstrong & Kotler: Marketing - An Introduction.*
- ❖ *C. S. V. Murthy: Business Ethics.*
- ❖ *J. C. Gandhi: Marketing Management, Tata McGraw Hill*
- ❖ *Philip Kotler: Principles of Marketing.*
- ❖ *R..S.Davar: Marketing Management.*
- ❖ *Sherlaker S. A.: Marketing Management.*
- ❖ *Sontakatti: Marketing Management, Kalyani Publishers*
- ❖ *William Stanton: Marketing Management.*
- ❖ *William Stanton, Michael Etzel, Bruce Walker: Fundamentals of Management, Tata McGraw Hill Education*

## C5 21 DC 303: PROGRAMMING FOR ANALYTICS

### COURSE OBJECTIVES

This course aims to introduce data management system and its applicability in business, it also enables the students to apply various programming languages in analysis of data for decision making.

#### **Module 1: Introduction: Database Management Systems** **10 Hrs**

Definition, Characteristics of DBMS, Architecture & Security, Types of Data Models, Concepts and constraints of RDBMS, Introduction to Structured Query Language, MySql Installer, Download sample Database, Loading Sample Database.

#### **Module 2: Data definition and Manipulation** **15 Hrs**

SQL Process, SQL Commands – DDL, DML, DCL, DQL, SQL Constraints, Data Integrity, Data Types, SQL Operators, Expressions, Querying Database, Retrieving result sets, Sub Queries, Syntax for various Clauses of SQL, Functions and Joins, Indexes, Views, Transactions.

#### **Module 3: Basics of SAS** **15 Hrs**

Introduction to SAS, Installation of SAS university Edition, prerequisites for data analysis using SAS, SAS Architecture, Data Types, Formats and Informats, SAS coding- Data step and proc step, Libraries, Importing external data, Reading and Manipulating Data, Functions, Data Transformations, Conditional Statements.

#### **Module 4: Python: Basics of Python** **10 Hrs**

Installation of Anaconda Navigator, Data types – string, tuples, set, lists, dictionary, Arrays. Spyder, Importing and Exporting Files, Data Manipulation, Descriptive Statistics and Documentation with Jupyter.

#### **Module 5: R Programming:** **10 Hrs**

Basics of R, Installation of R studio, Vectors, Matrices, Data types, Importing files, Writing files, Merging Files, Data Manipulation, Creation and Deletion of New Variables, Sorting of Data, Functions, Graphical Presentation and Descriptive Statistics.

### **Skill Development**

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

1. Create and develop Entity Relationship Diagrams for different types of systems incorporating Database Management and program them using SQL (v8).
2. Apply and analyze the usability of different SaS procedures such as SGPLOT, UNIVARIATE, FREQ, MEANS in an analytics environment (SaS v9).
3. Create and develop an Exploratory Data Analysis report using Python (v3.7) & R programming (v4.1.0) based on the Covid19 dataset employing the use of different charts and graphs.
4. Understand different types of data and implement a wide array of operations and functions so as to explore and analyze it using Python and R Programming.
5. Understand and employ the use of Missing Value Treatment and Outlier Analysis so as to pre-process messy data and conceptualize the importance of Data Cleaning

procedures.

6. Implement Exploratory Data Analysis, Appropriate Data Preprocessing and Apply Statistics to make sense about the Data using Python Language.

## **COURSE OUTCOMES**

After the course the students will be able to:

1. Describe the utility of Data base Management system and applicability of data models.
2. Illustrate the usage of each type of data and its manipulation.
3. Use SAS for specific functions in accordance with the type of data.
4. Calculate descriptive statistics for analysis and interpretation by using Python.
5. Calculate descriptive statistics for analysis and interpretation by using R Programming.

## **Books for Reference**

- ❖ Ron Cody, 2021, *Getting Started with SaS Programming*, SaS.
- ❖ Jose Unpingco, 2021, *Python Programming for Data Analysis*, Springer.
- ❖ Antonio Badia, 2020, *SQL for Data Science: Data Cleaning, Wrangling and Analytics with Relational Databases*, Springer.
- ❖ Jared P. Lander, 2018, *R for Everyone: Advanced Analytics & Graphics*, Pearson
- ❖ Dyer. (2008). *MYSQL in a nutshell*. O' Reilly
- ❖ DuBois. (2014). *MySQL cookbook*. O' Reilly
- ❖ Delwiche & Slaughter. (2012). *SAS: The little SAS Book*. SAS Institute
- ❖ Hemedinger & McDaniel. (2010). *SAS for dummies*. Wiley
- ❖ Madhavan. (2015). *Mastering Python for Data Science*. Packt
- ❖ McKinney. (2017). *Python for Data Analysis*. O' Reilly
- ❖ Grolemund. (2014). *R : Hands-on Programming*; Garrett, O' Reilly
- ❖ Paul. (2011). *R: R Cookbook*. O' Reilly

## **SEMESTER - III**

### **C5 21 SB 301: ARTIFICIAL INTELLIGENCE IN ACCOUNTING AND AUDITING**

## **COURSE OBJECTIVES**

The course enables the students to illustrate the need and importance of applications of Artificial Intelligence in accounting and auditing and also evaluate the robotic automation process and its implication on assessment of risk and its reporting.

**Module 1: Introduction to Artificial Intelligence**

**5 Hours**

Meaning of Artificial Intelligence - Need and importance of AI in Accounting and Auditing, Origin of Artificial Intelligence - Applications of AI, Future of AI in Business/Accounting/Auditing - Challenges and Ethical considerations of AI

**Module 2: Chatbots and Speech Recognition**

**7 Hours**

Chatbots applications in Accounting and Auditing - Overview of IBM Watson in Auditing - Overview of Speech recognition software - Applications in Accounting and Auditing

**Module 3: Robot Process Automation**

**8 Hours**

Introduction - Automated Inherent Risk Assessment - Automating Internal Controls Assessment - Automated procedures - Reporting and Post-audit management - Intelligent Automation of Fraud Detection and Forensic Accounting

**Module 4: Machine Learning in Accounting and Auditing**

**10 Hours**

Machine Learning: Introduction to ML, Applications of ML, Cloud Accounting - Meaning, Types, Tools used in ML (RapidMiner), IoT: Introduction to IoT and its applications in Accounting/Auditing, Smart Analytics: Introduction, Need of Smart Analytics tool for Accounting/Auditing. Audit Software Overview and Features of audit software

**COURSE OUTCOMES**

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

1. Illustrate the need and importance of applications of Artificial Intelligence in accounting and auditing
2. Choose the applicability of IBM Watson, chatbot and speech recognition software on the basis of merit of the case.
3. Evaluate the robotic automation process in accounting and auditing in an organisation and its implications on assessment of risk and its reporting.
4. Examine the applicability of machine learning, Internet of Things and audit software and its suitability in the range of accounting and auditing processes.

**BOOKS FOR REFERENCES**

- Cory Ng and John Alarcon, Artificial Intelligence in Accounting, Publisher: Taylor & Francis Ltd, First Edition, December 2020, ISBN: 9780367431778.
- Al Naqvi, Artificial Intelligence for Audit, Forensic Accounting, and Valuation: A Strategic Perspective, Publisher : Wiley, USA, 1st edition, September 2020, ISBN-10 : 1119601886, ISBN-13 : 978-1119601883

**SEMESTER - IV**

**C5 21 DC 401: THEORY AND PRACTICE OF BANKING**

**COURSE OBJECTIVES**

This course aims to familiarize students with the banking system and to inculcate functional knowledge about interacting with bankers and create awareness about emerging trends and advancements in the field of banking.

**Module - 1: Nature of Banking and functions of a banker** **12 Hrs**

Functions of Commercial banks, Sources and employment of commercial bank funds, earning assets of a bank, Creation of credit by banks, Theories of Liquidity and profitability. Obligations and rights of a banker, Garnishee Order, Disclosure of information about customers account as required by law (KYC), Law of limitation. Corporate governance in banking sector

**Module - 2: Commercial banks and central bank** **8 Hrs**

Types of Banks: Scheduled and Non- Scheduled Banks, Regional Rural Banks, and Development Banks: IFCI, SFC, SIDC, ICICI, IDBI, and NABARD.

Types of Banking systems- Branch, Unit, Investment (Development), Universal (Mixed) Banking.

Understand the basic purpose and functions of: Retail banking - Investment banking (securities/trading) - Corporate Banking - Private banking - Co-operative banks.

Micro Credit- Meaning and Importance, Islamic financing-Meaning and Five Basic Principles.

Regulatory Authority-RBI Quantitative and qualitative credit control measures (in detail).

**Module - 3: Negotiable Instruments** **10 Hrs**

Essential Characteristics of Negotiable Instruments, Promissory note, Bills of Exchange, Cheque - (meaning and features), Bearer cheques, Crossed cheques, Types of Crossing and Opening of Crossing, Demand draft, Parties to a Negotiable Instrument.

**Module - 4: Paying and Collecting Banker** **10 Hrs**

Precautions to be taken by a Paying banker, Protection to Paying banker in case of Order cheques, Suitable replies to dishonored cheques. Conversion by Collecting banker, Duties of Collecting banker

**Module -5: Principles of Bank Lending and Managing Risk** **12 Hrs**

Principles of sound lending, Credit worthiness of borrowers, Non-Performing Assets, Modes of creating charge (Lien, Pledge, Hypothecation, Mortgage and its types, Assignment) Different types of risks - Basel norms and its global impact with special emphasis on its implementation in India.

**Module - 6: Latest trends in banking** **8 Hrs**

Phone banking- call centers- Internet banking-mobile banking- payment gateways-card technologies-MICR electronic clearing- Total branch computerization-centralized banking-electronic fund transfer-RTGS-NEFT-Electronic money-E- cheques. Green and sustainable banking

**Skill Development**

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

1. Analyse the various retail banking products offered by visiting the websites of Five different Commercial banks (three public and two private sector banks).
2. Create a record of sample forms collected from any retail bank for one asset product and one liability product offered by that bank.
3. Prepare a project report for obtaining bank loans.
4. Prepare a detailed report on the loan moratorium announced by RBI during the pandemic
5. Present the role of 'bad bank' in India that was announced in the Union budget of current financial year.

## **COURSE OUTCOMES**

After the Course the students will be able to:

1. Explain the nature and functions of commercial banks and disclosure of information about customers.
2. Illustrate the structure and system of banking in India.
3. Use negotiable instruments and cheques in accordance with the merit of the case.
4. Examine the role of a paying and collecting banker on different situations.
5. Apply risk management techniques in accordance with the type of the lending.
6. Examine the implications of recent trends in banking.

## **Books for Reference**

- ❖ *Sundaram & Varshney, Theory & Practice of Banking, Sultan Chand & Sons*
- ❖ *Maheswari & Paul, Banking Theory and Law and Practice, Kalyani publishers*
- ❖ *Shekhar & Shekhar, Theory and Practice of Banking, Vikas publishing*
- ❖ *M.Y. Khan, Indian Financial System, McGraw Hill Education*
- ❖ *Indian Institute of Banking and Finance (IIBF)(2019), Principles and Practice of Banking, Macmillan*
- ❖ *N. C. Gulati, Principles of Banking Management, Excel Books*

## **SEMESTER - IV**

### **C5 21 DC 402: HUMAN RESOURCES MANAGEMENT**

## **COURSE OBJECTIVES**

The course is conceptualized to acquaint the students with basic skills required in managing people in an organisation.

## **Module - 1: Brief Introduction to Human Resources Management (HRM)**

**8 Hrs**

HRM – Meaning, Importance, Objectives, Functions and Process, Structure of the HR department. HRM Governance

## **Module - 2: HR Planning, Recruitment, Selection & Induction, Training & Development**

**14 Hrs**

HRP: Objectives, and Benefits, Process of HRP, Challenges in HRP.

Recruitment: Definition, Objectives, factors affecting recruitment, sources of Recruitment and techniques of recruitment.

Selection: Meaning and definition, significance, selection procedures,

Placement: Meaning and definition

Induction: Meaning, definition, process and importance.

Training & Development: Meaning, Importance, Benefits, Need, Training Methods & Techniques, Evaluation of Training Programmes, Training Management Systems & Processes. Difference between training & development.

## **Module - 3: Performance Appraisals and Career Management**

**10 Hrs**

Performance Appraisal: Meaning, objectives, Importance. Process, methods (Traditional and Modern methods), essentials of a sound appraisal system -, problems of performance appraisal.

Career Planning & Development: Definition, importance, career stages, process of career planning and development. Establishing a career development system – actions and pre-requisites.

Succession planning: Meaning and importance, Differences in HRP and Succession Planning.

Employee Engagement: Meaning, Definition, Importance and strategies to improve employee engagement. Difference between employee engagement and employee satisfaction.

Attrition: Meaning and reasons for Attrition, Merits and De-merits of Attrition.

## **Module - 4: Compensation and Reward Management**

**8 Hrs**

Job Evaluation: Meaning, Importance and Techniques.

Compensation: Meaning, definition, concepts and objectives, Importance of an ideal compensation plan, Principles and methods of compensation fixation.

Rewards: Meaning and Importance, Types of Rewards- monetary and non-monetary rewards.

## **Module - 5: Human Resource Accounting & Auditing**

**8 Hrs**

Human Resource Accounting: Meaning, Objectives, Methods – Cost Based Approach- Value Based Approach (Concepts Only) – Limitations.

Human Resource Auditing: Meaning, benefits, process, approaches to HR Audit, phases involved in HR Audit, Audit Reports.

## **Module 6 – Contemporary Human Resource Practices.**

**12 Hrs**

Recent Trends in Human Resource Management: Recruitment & Selection (Predictive analysis, Social media recruiting, and Candidate experience). , Training & Development (Virtual mentorship, Experiential Learning, Learner centred E -Learning), Compensation & Rewards Management (Pay Equity, Quality of Work-Life Rewards & Digital rewards)

Remote working & Gig Economy: Benefits & Challenges

Digitalization in Human Resource Management: Gamification, Artificial Intelligence and Augmented Reality, Virtual reality (concepts only)

Human Resource Analytics: Meaning, benefits, application of HR Analytics, tools for HR Analytics (Concepts only)

Human resource value chain (Concept only)

Ethics in Human Resource Management: Code of employee conduct, Green HRM, Effect of Green HRM policies and practices

### **Skill Development**

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

1. Chart out the methods of appraising employees of any (one) organization of your choice.
2. Compare the HR policies of different companies in different sectors.
3. Analyse welfare techniques for employees of different categories (e.g. Women, men, senior employees).
4. Draft the executive development plan of any company.
5. Compare and contrast the different recruitment models in companies.
6. Impact of Covid-19 on employer manpower management.

### **COURSE OUTCOMES**

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

1. Illustrate the role and functions of Human Resource Manager in the capacity of practicing manager.
2. Illustrate the process of HR planning, Recruitment, selection and Induction of a hypothetical organization.
3. Compare and contrast the Training methods and techniques adopted by any two organization and evaluation of training programme.
4. Relate the implications of Performance appraisal system, Career Planning and Development and succession planning on Employees Engagement and attrition.
5. Justify the Design of Compensation and rewards in alignment with Job Evaluation. Develop a process of HR Audit and generate Audit Report.
6. Design an innovative business model or process integrated with emerging trends in HRM.

### **Books for Reference**

- ❖ *C. B. Memoria: Personnel Management.*
- ❖ *David Bell: Personnel Management.*



- ❖ *David R Hampton: Modern Management issues and Ideas.*
- ❖ *Deepak Kumar Bhattacharya: Human Research Management*
- ❖ *K. Aswathappa: Human Resource & Personnel Management.*
- ❖ *K. K. Aheja: Personnel Management.*
- ❖ *Michael Porter: HRM and Human Relations.*
- ❖ *T. N. Chhabra & K. K. Aheja: Managing People at Work.*
- ❖ *Amandeep Kaur, Punam Agarwal – Industrial Relations*
- ❖ *A. M. Sarma – Aspects of labour welfare and social security.*

#### **SEMESTER IV**

#### **C5 21 DC 403: BUSINESS STATISTICS WITH R PROGRAMMING**

#### **COURSE OBJECTIVES**

This course aims to enable students to apply R Programming and use statistical tools for data analysis and interpretation towards business decision making.

**Module 1: Introduction to R Programming**

**10 Hrs**

R and R Studio, Logical Arguments, Missing Values, Characters, Factors and Numeric, Help in R, Vector to Matrix, Matrix Access, Data Frames, Data Frame Access, Basic Data Manipulation Techniques, Usage of various apply functions – apply, lapply, sapply and tapply, Outliers treatment.

### **Module 2: Descriptive Statistics**

**15 Hrs**

Types of Data, Nominal, Ordinal, Scale and Ratio, Measures of Central Tendency, Mean, Mode and Median, Bar Chart, Pie Chart and Box Plot, Measures of Variability, Range, Inter-Quartile

Range, Standard Deviation, Skewness and Kurtosis, Histogram, Stem and Leaf Diagram, Standard Error of Mean and Confidence Intervals.

### **Module 3: Probability, Probability & Sampling Distribution**

**10 Hrs**

Experiment, Sample Space and Events, Classical Probability, General Rules Of Addition, Conditional Probability, General Rules For Multiplication, Independent Events, Bayes' Theorem, Discrete Probability Distributions: Binomial, Poisson, Continuous Probability Distribution, Normal Distribution & t-distribution, Sampling Distribution and Central Limit Theorem.

### **Module 4: Statistical Inference and Hypothesis Testing**

**15 Hrs**

Population and Sample, Null and Alternate Hypothesis, Level of Significance, Type I and Type II Errors, One Sample t Test, Confidence Intervals, One Sample Proportion Test, Paired Sample t Test, Independent Samples t Test, Two Sample Proportion Tests, One Way Analysis of Variance and Chi Square Test.

### **Module 5: Correlation and Regression**

**10 Hrs**

Analysis of Relationship, Positive and Negative Correlation, Perfect Correlation, Correlation Matrix, Scatter Plots, Simple Linear Regression, R Square, Adjusted R Square, Testing of Slope, Standard Error of Estimate, Overall Model Fitness, Assumptions of Linear Regression, Multiple Regression, Coefficients of Partial Determination, Durbin Watson Statistics, Variance Inflation Factor.

### **Skill Development**

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

1. Learn the implications of different apply functions in R and use them depending on the different data type.
2. Analyze and calculate Measures of Central Tendency & Dispersion to critically analyze the given data and report the findings.
3. Understand and implement Probabilistic Laws and Distributions based on Binomial and Continuous data scenarios.
4. Create and test Hypothesis using different types of Parametric and Non-Parametric tests and provide appropriate inference based on the obtained experimentation results.
5. Critically analyze and compute statistical measures such as R<sup>2</sup>, RMSE, VIF for reporting model performance in a Regression scenario.

## **COURSE OUTCOMES**

After the Course the students will be able to:

1. Use R Programme for specific apply functions.
2. Calculate descriptive statistics for analysis and interpretation.
3. Compare and contrast characteristics of each probability distribution for the selection of appropriate tool(s) for further analysis.
4. Choose an appropriate Test for testing of hypothesis.
5. Interpret the result of Correlation and regression analysis.

## **Books for Reference**

- ❖ *Ken Black (2013). Business Statistics, New Delhi, Wiley.*
- ❖ *Anderson, David R., Thomas A. Williams and Dennis J. Sweeney. (2012). Statistics for Business and Economics. New Delhi: South Western.*
- ❖ *Levin, Richard I. and David S. Rubin (1994). Statistics for Management. New Delhi: Prentice Hall.*
- ❖ *Waller, Derek. (2008). Statistics for Business. London: BH Publications*
- ❖ *Lee, Cheng. et al. (2013). Statistics for Business and Financial Economics. New York: Heidelberg Dordrecht.*
- ❖ *Matt Wiley & Joshua Wiley, 2020, Beginning R 4: From Beginner to Pro, Wiley.*
- ❖ *Jared P. Lander, 2018, R for Everyone: Advanced Analytics & Graphics, Pearson*