St. Joseph's College of Commerce (Autonomous)

163, Brigade Road, Bengaluru – 560 025

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

Ranked 55th in NIRF 2024 by the Ministry of Education, Government of India

Recognized by the UGC as

"COLLEGE WITH POTENTIAL FOR EXCELLENCE"

B.Sc. (Economics, Mathematics & Data Analytics)

with a deep specialisation in Economics

Semester - I & II

Syllabus as per Karnataka State Education Policy 2024

Curriculum Framework w.e.f., 2024-2025

Academic Year 2025 – 2026

Batch 2025

St. Joseph's College of Commerce (Autonomous)

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 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 UGCin 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 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 55th in the National Institutional Ranking Framework (NIRF) ratings of Ministry of Education, Government of India, in 2024 and it has been the only institution from Karnataka to make it consistently to the top 100 in the country.

The college offers diverse programmes in Commerce, Business Administration, Arts and Science. 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). Under Arts it offers BA (English, Communicative English and Psychology) and Under Science it offers B.Sc. (Economics, Mathematics and Data Analytics). The college also offers five one-year Post Graduate Diploma programmes.

THE DEPARTMENT OF ECONOMICS, MATHEMATICS AND DATA ANALYTICS

The Departments together offer the **B.Sc. (Economics, Mathematics and Data Analytics) with a deep specialisation in Economics.** These Departments have been established to provide a rigorous and interdisciplinary undergraduate education, in line with the **Karnataka State Education Policy 2024.** This programme is carefully designed to offer cutting-edge expertise in Economics, a strong foundation in Mathematics, and hands-on training in Data Analytics.

This three-year undergraduate programme aims to develop analytical, quantitative, and computational thinking, along with strong problem-solving and decision-making skills. It fosters a deep understanding of economic theories, mathematical reasoning, and data-driven methodologies, preparing students to respond to real-world challenges with clarity and precision.

The transferable skills acquired through this programme are highly sought after by employers across multiple sectors. Graduates can pursue careers as economists, data analysts, financial

consultants, government advisors, bankers, research officers, and other roles within both public and private domains.

This programme is multidisciplinary in nature and integrates diverse subject areas such as Economics, Mathematics, Statistics, Operations Research, Finance, Data Science, Politics, Environmental Studies, and Model Building, all framed within both local and global contexts.

Modern academic components like internships, case studies, seminars, and research projects are embedded in this programme to provide practical exposure and application-oriented learning. These experiences enhance students' readiness for both employment and higher education.

This programme is a three-year, full-time undergraduate degree that blends classical academic rigour with contemporary relevance. It equips students with business acumen, research capabilities, and policy literacy, enabling them to thrive in today's complex and data-driven world.

Join us at SJCC and embark on a transformative academic journey with this programme—designed to develop thinkers, innovators, and leaders for the future.

Economics Major

- Develops expertise in mainstream economics, enhancing analytical, creative, and critical thinking for effective problem-solving and decision-making.

- Offers an interdisciplinary approach with a strong foundation in Economics, emphasizing both local and global perspectives in understanding economic systems and policies.

- Equips students with transferable skills, boosting employability for roles such as economist, government advisor, financial consultant, and banker

Mathematics Major

- Provides a strong foundation in core mathematical topics such as calculus, linear algebra, and optimization methods, emphasizing problem-solving and analysis.

- Focuses on practical applications, enabling students to tackle real-world problems in areas like science, engineering, and economics.

- Enhances proficiency in computational tools and techniques through projects and case studies, with applications in data analysis, operations research, and finance.

Data Analytics Major

- Develops essential skills in data cleaning, statistical techniques, exploratory analysis, and machine learning applications for informed decision-making.

- Offers hands-on experience with tools like Python, R, Power BI and SQL for data manipulation, visualization, and problem-solving.

- Applies knowledge to real-world challenges in industries such as finance, healthcare, and marketing through case studies and projects.

OBJECTIVES OF THE B.Sc. PROGRAMME

- To impart knowledge to students in functional areas of Economics, Math & Data Analytics, so that they may pursue careers in Economics, Math & Data Analytics.
- To incorporate extensively – along with theoretical knowledge sharing – various skills (viz., Presentations, rapid reading, geopolitical awareness, time management) needed for managerial effectiveness.
- To gain diverse employment prospects, master microeconomics and macroeconomics, and cultivate problem-solving and decision-making skills.
- To develop a thorough grasp of data analysis, comprehend statistical and mathematical techniques, and master the utilization of technology for proficient data analysis.
- To acquire practical insights, apply knowledge to real-life scenarios, and make sound financial decisions.

I. ELIGIBILITY FOR ADMISSION

Candidates who have completed the two-year Pre-University course of Karnataka State or its equivalent are eligible to apply for admission into this Programme and must have compulsorily studied mathematics in 11^{th} and 12^{th} grade.

II. DURATION OF THE PROGRAMME

The duration of the programme is three (03) 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. Students successfully completing three (03) years of the programme will be awarded bachelor's degree with a deep specialization in Economics.

III. MEDIUM OF INSTRUCTION

The medium of instruction shall be in 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. TEACHING AND EVALUATION

MSc/MA/M.Com/MBA/MFA/MBS/MTA graduates with B.Sc./BA/B.Com 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, Skill based, Value Based and Foundation courses, mentioned in this regulation. These courses shall be taught by the Postgraduates as recognized by the respective Board of Studies.

VI. Scheme Of Examination

ACADEMIC EVALUATION UNDER STATE EDUCATION POLICY (SEP)

(EFFECTIVE FROM ACADEMIC YEAR 2024-2025)

The academic evaluation of both undergraduate (UG) and postgraduate (PG) programmes consists of two components: Continuous Internal Assessment (Formative Assessment) and End-Semester Examination (Summative Assessment).

Assessment for UG Students under SEP will be as follows:

Type of Assessment	Assessment Component	Allotted Marks
Continuous Internal Assessment/ Formative Assessment	CIA I (Test)	10 Marks
	CIA II (Skill-based Assessment)	10 Marks
	Mid-Term Exam	20 Marks
Total	**40 marks (scaled down to 20 marks)**	
End-Semester Examination/ Summative Assessment	End-Semester Examination (For three hours duration)	80 Marks
TOTAL		**100 Marks**

A. Additional Details

- **Mid-Term Exam**: The mid-term exam covers at least 40-50% of the syllabus and has duration of one hour.
- **Continuous Internal Assessment (CIA) Activities**: CIA activities are designed with clear objectives, modalities, assessment rubrics, and outcomes.

B. CIA improvement

There is **no provision for enhancing CIA marks** for UG students once the semester ends.

Attendance requirement for taking ESE

- The University Grants Commission (UGC) mandates a minimum of 75% attendance in each course to be eligible to write the End Semester Examinations (ESE).
- There is no provision for condonation of attendance under the UGC Act.

VII. Minimum for a pass

- **Minimum Pass Marks in Final Examination**: A minimum of 40 percent is required in each course in the End Semester Exams. The student must score at least 32 marks out of 80 in the End Semester Examination (ESE).
- **Overall Pass Requirement**: The aggregate of Continuous Internal Assessment (CIA) and End Semester Examination (ESE) should also be a minimum of 40 percent. Out of 100 marks, a student must secure at least 40 marks in each course to qualify as passed inclusive of a minimum of 32 marks out of 80 in End Semester Exam.

VIII. Grading System For Choice Based Credit System (CBCS)

The modalities and operational details are given below:

- **Grade Points**: The College adopts a ten-point grading system. 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.

Credits: Credits are assigned to courses based on the following broad classification

Courses Category	Instruction Hours/week	Credits
Languages	3 Hours	3
Major Core	4 or 5 Hours	4 or 5
Skill Enhancement Courses	1-4 Hours	1-4
Compulsory Courses	1-2 Hours	1-2

Grade point calculation

- **Semester Grade Point Average (SGPA):** The SGPA is calculated as the sum of the product of the credits and the grade points scored in all courses, divided by the total credits.
- Minimum SGPA required for a pass is 4.5.

SGPA = Total of (Credits Earned X Grade Points) ÷ Total of Corresponding Credits

- If a student has not passed in all courses or is absent, the SGPA is not assigned.
- Cumulative Grade Point Average (CGPA): The CGPA is the weighted average of all the courses taken by a student across all semesters of a programme.

CGPA = ∑Total Credits in the Semester × SGPA ÷ Total Credits of the Courses

Note: SGPA and CGPA will be rounded off to two decimal places.

Grade Points	% of Marks	Grade	Result/Class Description
9.00- 10.00	85 - 100	O	Outstanding
8.00- 8.99	75 - 85	A+	First Class Exemplary

7.00- 7.99	65 - 75	A	First Class Distinction
6.00- 6.99	55 – 65	B+	First Class
5.50- 5.99	50 -55	B	High Second Class
5.00- 5.49	45 - 50	C	Second Class
4.50 - 4.99	40 - 45	P	Pass Class
Below 4.5	Below 40	RA	To Re-Appear

Interpretation of SGPA/CGPA and Classification of Final Result

IX. PATTERN OF ESE QUESTION PAPER UNDER SEP

The End Semester Examination (ESE) question paper under SEP will include questions that assess both Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS). The difficulty level of the question paper will be distributed as follows: 40% easy, 30% difficult, and 30% very challenging. Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS).

- **Duration**: 3 Hours
- **Maximum Marks**: 80

The question paper pattern will be as follows:

Sections	**Marks per Question**	**Number of Questions**	**Total Marks**
Section A	2 marks	5 questions (out of 7)	10 Marks
Section B	5 marks	4 questions (out of 6)	20 Marks
Section C	12 marks	3 questions (out of 5)	36 Marks
Section D	14 marks	1 question (Case Study)	14 Marks
Total			**80 Marks**

X. **REVALUATION AND RETOTALING**

Requests for **revaluation**, **retotaling**, and **photocopies of the answer book** for the End-Semester Examination (ESE) must be submitted to the Controller of Examination along with the prescribed fee within two weeks from the declaration of results.

XI. Absence during End Semester Examination

If a student misses the End Semester Examination, they will be marked as "Absent" and will be required to take the supplementary examination for that course during the next available opportunity only.

XII. Malpractice

Students will be dealt severally in case if they are found guilty of any malpractices during examination. The college has zero tolerance towards any kind of foul means adopted to secure marks in the exams.

OUTCOME BASED EDUCATION (OBE)

Our B.Sc. programme will produce graduates who will be capable of the following:

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PE O1: Develop professional competence to become successful managers and entrepreneurs in academia, industry or government.

PE O2: 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

PE O3: Act with conscience of global, ethical, societal, ecological and commercial awareness with sustainable values as is expected of practicing management professionals contributing to the country

PE O4: Able to continue their professional development by obtaining advanced degrees in Management or other professional fields

Programme Outcomes

PO 1: Disciplinary and Inter-disciplinary Knowledge

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

PO 2: Decision Making Skill

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

PO 3: 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.

PO 4: Critical Thinking Skill
Evaluate evidence, arguments, claims, and beliefs by using appropriate reasoning for the situation and analyze how parts of a whole interact to produce overall outcomes in complex systems.

PO 5: Creative Thinking Skill
Develop, implement, and communicate new and worthwhile ideas using both incremental and radical concepts to make a real and useful contribution to their work.

PO 6: 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.

PO 7: Leadership and Team Work
Develop a vision, translate that vision into shared goals, and effectively work with others to achieve these goals.

PO 8: Ethical Conduct
Act responsibly and sustainably at local, national, and global levels.

PO 9: Collaboration
Work collaboratively and respectfully as members and leaders of diverse teams.

PO 10: 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 the attainment of the goals.

Programme Specific Outcomes (PSOs)

PSO 11: Analytical, Technological, and Quantitative Competence
Graduates will demonstrate the ability to apply economic theories, mathematical models, and statistical techniques, along with proficiency in modern data analytics tools to analyze and solve real-world economic, financial, and business problems through data-driven decision-making.

PSO 12: Interdisciplinary Problem-Solving and Research for Societal Impact
Graduates will integrate knowledge from economics, mathematics, and data analytics to conduct interdisciplinary research, formulate strategic insights, and propose innovative, sustainable solutions to complex challenges in public policy, finance, environmental studies, and global economic systems.

Programme Matrix for SEP Batch

(Deep Specialisation in Economics in the V and VI Semester)

2025-26 Batch

B.Sc. (ECONOMICS, MATHEMATICS AND DATA ANALYTICS) with a deep specialization in Economics							
Category/ Semester	**I**	**II**	**III**	**IV**	**V**	**VI**	**Total Credits**
PART A: LANGUAGES							
Languages 4 Hrs - 3 Crs	Lang I Lang II	Lang I Lang II	Lang I Lang II	Lang I Lang II	- -	- -	
Part A Credits	**6**	**6**	**6**	**6**	**-**	**-**	**24**
PART B: DISCIPLINE-SPECIFIC CORE & ELECTIVE COURSES							
Major Core Economics (5 Crs)	Micro economics 5 Crs	Macro economics 5 Crs	Monetary Econometrics 5 Crs	Financial economics 5 Crs	DEEP SPECIALISTAION IN ECONOMICS	Basic Econometrics 5 Crs	History of Economic Thought 5 Crs	
Major Core Mathematics (5 Crs)	Introduction to Calculus and Differential Equations 5 Crs	Linear Algebra 5 Crs	Advanced Calculus and Differential Equations 5 Crs	Numerical Methods 5 Crs		Operation Research 5 Crs	Behavioural Economics 5 Crs	
Major Core 3 Data Analytics (3Crs)	Fundamentals of Statistics 3 Crs	Advanced Statistics 3 Crs	Fundamentals of Data Analytics 3 Crs	Advanced Data Analytics – Machine Learning 3 Crs		International Economics 5 Crs	Public Economics 5 Crs	
Major Core 3 Data Analytics Practical (2Crs)	Fundamentals of Statistics using R Programming 2 Crs	Advanced Statistics using R Programming 2 Crs	Introduction to Python Programming 2 Crs	Advanced Python Programming 2 Crs		Economics of Growth and Development 5 Crs	Environmental Economics 5 Crs	
Part B Credits	15	15	15	15		20	20	100
PART C: SKILL ENHANCEMENT COURSES/ACTIVITIES							
Skill Based Courses(2 Crs)	Data Analytics using Spreadsheets (2 Crs)	Applied Mathematical Economics (2Crs)	Stock Trading (2Crs)	Social Internship (2Crs)	Academic Writing (2Crs) Research Methodology (2 Crs)	Publication Ethics (2Crs) Professional Internship (2 Crs) Research Project (2Crs)	
Value-Based Activities (1 Cr)		Extra-Curricular Activities (1 Cr)		Extra-Curricular Activities (1 Cr)	-	Extension Activities (1 Cr)	
Part C Credits	2	3	2	3	4	7	21
PART D: COMPULSORY COURSES							
Foundation/ Compulsory Courses (1Cr/2 Crs)	Constitutional Values I (2 Crs) Psychological Wellbeing (1 Cr)	Constitutional Values II (2 Crs)	Environmental Studies (2 Crs)	-	-	-	
Part D Credits	3	2	2	-	-	-	7
Total Credits	26	26	25	24	24	27	152

Course Matrix for B.Sc. (Economics, Mathematics & Data Analytics) - SEP Batch

SEMESTER I

(Batch 2025-2026)

Course Code	Title of the Course	Category	Lecture Hours per week	Credits	CIA	ESE	Marks
S1 24 MC 101	Microeconomics	Major Core	5+0+0	5	20	80	100
S1 25 MC 102	Introduction to Calculus and Differential Equations	Major Core	5+0+0	5	20	80	100
S1 25 MCT 103	Fundamentals of Statistics	Major Core	3+0+0	3	20	80	100
S1 25 MCP 103	Fundamentals of Statistics using R Programming	Major Core (Practical)	0+0+2	2	-	50	50
S1 25 SE 101	Data Analysis using Spreadsheet	Skill Enhancement	2+0+0	2	20	30	50
S1 24 GE 101	General English	Language 1	3	3	20	80	100
	Language 2	Language 2	3	3	20	80	100
S1 24 KN 101	Kannada						
S1 24 HN 101	Hindi						
S1 24 AE 101	Additional English						
UG 24 FC 101	Psychological wellbeing	Foundation Course	1	1	-	25	25
UG 24 CC 101	Constitutional Values I	Compulsory Course	2	2	-	50	50
Total credits				**26**	**120**	**555**	**675**

SEMESTER II

Course Code	Title of the Course	Category	Lecture Hours per week	Credits	CIA	ESE	Marks
S1 24 MC 201	Macro Economics	Major Core	5	5	20	80	100
S1 24 MC 202	Linear Algebra	Major Core	5	5	20	80	100
S1 24 MCT 203	Advanced Statistics	Major Core	3	3	20	80	100
S1 24 MCP 203	Advanced Statistics Using R Programming	Major Core Practical	2	2	-	50	50
S1 24 SE 201	Applied Mathematical Economics	Skill Enhancement	2	2	20	30	50
	Language 1						
S1 24 GE 201	General English	Language	3	3	20	80	100
	Language 2	Language	3	3	20	80	100
S1 24 KN 201	Kannada						
S1 24 HN 201	Hindi						
S1 24 AE 201	Additional English						
UG 24 CC 201	Constitutional Values II	Compulsory course	2	2		25	50
UG 24 EC 202	Extra-Curricular activities	Value Added Activity	1	1		50	25