



ST. XAVIER'S COLLEGE – MUMBAI
(Est. 1869)

**(An Autonomous College affiliated with the University of
Mumbai)**

**Syllabus for Undergraduate Programme as
per National Education Policy (NEP-2020)**

Programme: BA/BSc in Statistics

The academic year 2023–2024

**PRINCIPAL
ST. XAVIER'S COLLEGE
(AUTONOMOUS)
MUMBAI - 400 001.**

APPROVED SYLLABUS



Preamble:

The foundational principles of the National Education Policy 2020 (NEP 2020) released by MHRD are:

- Multidisciplinary and holistic education (student-centred), encompassing courses from multiple disciplines across the sciences, social sciences, arts, humanities, and commerce for a multidisciplinary world, with emphasis on outcome-based learning.
- 50-50 formulation, where 50% of the credits must be from the core discipline and the rest 50% from other disciplines. Also, 50% of the course must be conceptual and theory based and the rest 50% must be the application of the concepts into practice through student engagement in activities/apprenticeship and internship. Pedagogic methods must be problem-centred/ based and project-based learning and activities.
- Integration of technology into teaching-learning-evaluation resources, blended teaching-learning (face-to-face, online collaborative learning, hands-on and practicum and flipped learning), strengthening research pedagogy of the discipline.
- Integrating skilling and employability with curriculum and teaching-learning across disciplinary, inter-disciplinary, and multi-disciplinary studies.
- Multiple entry and exit options for students within an academic programme of study with credit transfer and accumulation of credits in the Academic Bank of Credits (ABC).
- Equality is the Goal, and Equity is a process to achieve equality and inclusion to promote students' sense of belonging.

The framework of the choice-based credit system

Major Subject: A single subject course of study pursued by a student as a mandatory requirement of the programme of study. Indian knowledge system (IKS) to be included in the core courses.

Elective Course: An elective course could be a project designed to acquire skills to supplement the major study.

Minor Subject: A second subject of study pursued by a student as an additional requirement of the programme of study.

OE: Open Elective - An elective course chosen generally from an unrelated discipline/subject, to seek multidisciplinary exposure.

AEC: Ability Enhancement Course - Mandatory Courses on content related to Language, and Literature
(i) Compulsory – English communication (ii) Elective – any Indian language other than English.

IKS: Indian Knowledge System (Generic) – Mandatory course - an overview of the contribution of India towards multidisciplinary research and development.

VSC: Vocational Skill Course – Courses aimed at imparting practical skills, hands-on training, and soft skills to increase the employability of students. Specific or supporting the major subject is to be chosen from a basket/pool offered by the college.

SEC: Skill Enhancement Course – Courses aimed at imparting practical skills, hands-on training, and soft skills to increase students' employability. It could be chosen from a basket/pool offered by the college or a MOOC on Swayam or NPTEL platforms.

On-Job Training (OJT)/Internship/Field Project (FP)/Community Engagement Programme (CEP) Research Project (RP): Application of knowledge/concepts in solving or analyzing a real-life problem. All these are related to the major subject.

© St. Xavier's College (Autonomous), Mumbai, INDIA

APPROVED SYLLABUS



CC: Co-curricular Course – For the holistic development of students through Cultural activities such as performing art, visual art, NCC, NSS, Yoga, etc.

VEC: Value Education Course – Compulsory courses on (i) The Constitution of India and (ii) Environmental Education.

FYUGP Credit Structure with number of courses 2023-24													
Level	Sem	Sub-1/Major	Elective	Sub-2/Minor	OE	VSC	SEC	IKS generic	AEC	VEC	OJT, FP, RP, CEP, CC	Total	Degree/Cum Cr
4.5/100-199 (2023-24) First Year	Sem 1	1	0	1	2	1	1	1	1	1	0	9	44 credits UG certificate
	Sem 2	1	0	1	2	1	1	0	1	1	CC 1	9	
Introductory Courses		2	0	2	4	2	2	1	2	2	1	18	
Exit option with a UG Certificate in Major &/or Minor with an additional 4 credits NSQF course/internship OR continue with Major & Minor													
5/200-299 (2024-25) Second Year	Sem 3	2	0	1	1	1	0	0	1	0	FP CEP 1 (Sci) & CC 1	8	88 credits UG Diploma
	Sem 4	2	0	1	1	0	1	0	1	0	FP/CEP 1 (Art/Com) & CC 1	8	
Intermediate Courses		6	0	4	6	3	3	1	4	2	5	34	
Exit option with a UG Diploma in Major & Minor with an additional 4 credits NSQF course/internship OR continue with Major & Minor													
5.5/300-399 (2025-26) Third Year	Sem 5	3	1	1	0	1	0	0	0	0	FP 1	7	132 credits UG Degree
	Sem 6	3	1	1	0	0	0	0	0	0	OJT 1 Internship	6	
Higher Courses		12	2	6	6	4	3	1	4	2	7	47	
Exit option with a Three-Year Bachelor Degree with Major and Minor OR continue with Major & Minor (Fourth year by Papers)													
6/400-499 (2026-27) Fourth Year	Sem 7	3	1	RM1	0	0	0	0	0	0	FP 1	6	176 credits UG Honours
	Sem 8	3	1	0	0	0	0	0	0	0	OJT 1 Internship	5	
Advanced Courses		18	4	7	6	4	3	1	4	2	9	58	
Exit option with a Three-Year Bachelor Degree with Major and Minor OR continue with Major & Minor (Fourth year by Research)													
6/400-499 (2026-27) Fourth Year	Sem 7	3	1	RM1	0	0	0	0	0	0	RP 1	6	176 credits UG Honours with Research
	Sem 8	3	1	0	0	0	0	0	0	0	RP 1	5	
Advanced Courses		18	4	7	6	4	3	1	4	2	9	58	
Four-Year UG Honours with Research Degree with Major and Minor													

FYUGP Credit Structure from 2023-24 (Sci-Arts)													
Level	Sem	Major (Sub-1)		Minor (Sub-2)	OE	VSC		IKS Generic	OJT, FP, RP, CEP		Cum Cr/Sem	Degree/Cum Cr	
		Elective				SEC	AEC, VEC		CC				
4.5 (2023-24)	Sem 1	4	0	4	4	4	6	0	2	2	22	44 UG certificate	
	Sem 2	4	0	4	4	4	4	2	4	2	22		
	Cum Cr	8	0	8	8	8	10	2	4	4	44		
A student will decide which of the 2 subjects (Sub-1 or Sub-2) will be major and minor at the end of the second semester (ie the first year) Major subject-specific IKS of 2 credits must be done as 2 units (could be 1 unit + 1 unit) from Sem 3 to Sem 6													
Exit option with a UG Certificate in Major with an additional 4 credits core NSQF course/internship OR continue with Major & Minor													
5 (2024-25)	Sem 3	8	0	4	2	2	2	4	4	2	22	88 UG Diploma	
	Sem 4	8	0	4	2	2	2	4	4	2	22		
	Cum Cr	24	0	16	12	12	14	10	8	8	88		
Exit option with a UG Diploma in Major & Minor with an additional 4 credits core NSQF course/internship OR continue with Major & Minor													
5.5 (2025-26)	Sem 5	12	4	2	0	2	0	2	4	2	22	132 UG Degree	
	Sem 6	12	4	2	0	0	0	4	4	2	22		
	Cum Cr	48	8	20	12	14	14	16	132	132			
6 (2026-27)	Sem 7	12	4	4	0	0	0	2	6	2	22	176 UG Honours	
	Sem 8	12	4	0	0	0	0	6	6	2	22		
	Cum Cr	72	16	20	12	14	14	24	176	176			
Exit option with a Three-Year Bachelor Degree with Major and Minor OR continue with Major & Minor													
6 (2026-27)	Sem 7	10	4	4	0	0	0	4	8	2	22	176 UG Honours with Research	
	Sem 8	10	4	0	0	0	0	8	8	2	22		
	Cum Cr	68	16	20	12	14	14	28	176	176			
Four-Year UG Honours with Research Degree with Major and Minor													



Programme Outcomes aligned to the Vision and Mission of St. Xavier's College (Autonomous), Mumbai (Bachelor's degree programme)

The students who complete three years of an undergraduate programme will be able to manifest skills and competencies in the following areas:

- 1. Disciplinary knowledge and Core competencies/skills:**
Demonstrate (i) a lucid understanding of the fundamentals of the subject-related curriculum and (ii) basic and global skills in the academic field of study.
- 2. Critical and Creative thinking:**
(i) Critically reflect on acquired knowledge and skills in areas of core competencies (ii) Explore new possibilities and be resourceful by generating relevant and practical ideas
- 3. Problem-solving and Analytical reasoning:**
Demonstrate skills in identifying and investigating a problem. Collect relevant qualitative and quantitative data and analyze the results meaningfully.
- 4. Research-related skills:**
(i) Apply comprehensive research-based knowledge and skills required for identifying issues, interpreting results, and synthesis of valid information. (ii) Communicate results of studies undertaken in an academic field effectively and accurately.
- 5. Social Application of research and development:**
Employ core competencies and skills to develop solutions for the improvement of social and environmental conditions.
- 6. Industry-related skills:**
Employ skills that are relevant to the industry and commit to strong work ethics and professionalism.
- 7. Ethical and Moral Integrity:**
Practice values such as honesty, transparency, and accountability and commit to interpersonal and social ethics.
- 8. Empathy and Social Intelligence:**
Cultivate and demonstrate affective, interpersonal, social, and spiritual intelligence.
- 9. Collaboration, Teamwork, and Multidisciplinary competence:**
Apply knowledge and skills as an individual, team member or leader to manage ventures in monodisciplinary and interdisciplinary settings.
- 10. Leadership and Management:**
Demonstrate effective strategic planning, and efficient organizational and transformational leadership skills to manage a mission embarked upon.
- 11. Social Concern:**
Demonstrate (i) empathy and care for the marginalized and disadvantaged, (ii) respect, compassion, and concern for others.
- 12. Social responsibility and inclusion:**
(i) Strive for social justice, harmony, and solidarity (ii) Value cultural pluralism and diversity.
- 13. Environmental Wellbeing**
Investigate and design strategies to care for and enhance the well-being of the environment.
- 14. Self-motivation and Lifelong learning:**
Develop a passion for ongoing personal and professional growth.



Abbreviations:

- OE: Open Electives
- AEC: Ability Enhancement Course
- VSC: Vocational Skill Course
- SEC: Skill Enhancement Course

List of Courses offered from Semesters 1-4 in Statistics (Science)

Level	Semester	Major (Sub-1) Course titles	Minor (Sub-2) Course titles	OE Course title/s	VSC Course title/s	SEC
4.5 100- 199	Sem 1	Fundamentals of Statistics(A) USSTA4501CR1	-----	Descriptive Statistics(A) USSTA4501OE1	Data Collection & Visualisation USSTA4501VS1	
	Sem 2	Fundamentals of Statistics(B) USSTA4502CR1	-----	Descriptive Statistics(A) USSTA4501OE1	Data Collection & Visualisation USSTA4501VS1	
5 200- 299	Sem 3	Statistical Methods(A) Sampling Techniques	Statistical Methods(A)	Descriptive Statistics(B)	Basic Statistical computing using R	
	Sem 4	Statistical Methods(B) Analysis of Variance & Design of Experiments	Statistical Methods(B)	Descriptive Statistics(B)		



List of Courses offered from Semesters 1-4 in Statistics (Arts)

Level	Semester	Major (Sub-1) Course titles	Minor (Sub-2) Course titles	OE Course title/s	VSC Course title/s	SEC
4.5 100- 199	Sem 1	-----	Fundamentals of Statistics(A) UASTA4501MN1	-----	-----	
	Sem 2	-----	Fundamentals of Statistics(B) UASTA4502MN1	-----	-----	
5 200- 299	Sem 3	-----	Statistical Methods(A)	-----	-----	
	Sem 4	-----	Statistical Methods(B)	-----	-----	



Composition of the Board of Studies in Statistics 2023 – 2024 (13/03/2023)

Sr. No.	Composition	Name
1	Head of the Department (Chairman)	Mr. Saju V. George
2	Entire faculty of each specialisation	Ms. Ayesha Dias
		Dr. S. Annapurna
		Ms. Piyali Unnikrishnan
		Mr. Mayur More
		Mr. Mangesh Kutekar
		Mr. Omkar Thakur
3	Two subject experts (other University)	Dr. Pradnya Khandeparkar
		Dr. Manisha Sane
4	VC nominee	Dr. Santosh Gite
5	Representative from industry/corporate sector/allied	Mr. Vinayak Deshpande
6	PG meritorious alumnus	Mr. Brian Almeida
7	(a) Experts from outside the college (co-opted)	---
	(b) Other members of staff of the same faculty	---

Four-Year Undergraduate Programme in Statistics

Year of Implementation	Semester	Course Code	BOS Date	Academic Council Date
2023-2024	1	USSTA4501CR1 USSTA4501VS1 USSTA4501OE1 UASTA4501MN1	13-03-23	21-04-23
2023-2024	2	USSTA4502CR1 USSTA4501VS1 USSTA4501OE1 UASTA4502MN1	13-03-23	21-04-23



Programme Specific Outcomes (PSO) - Statistics (Science) & Statistics (Arts)

Sr. No.	On completing B.Sc. Statistics (Science), the student will be able to:
PSO 1	Recognize the importance and value of statistical thinking, training and approach to problem solving.
PSO 2	Apply theoretical concepts in Statistics to practical situations..
PSO 3	Use software to aid problem solving.
PSO 4	Use statistical techniques to work effectively in analytical, scientific, financial, actuarial, pharmaceutical, technical and other positions of government/non-government organizations.

