



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

**(An Autonomous College affiliated to The University of Mumbai)**

## **Syllabus for Undergraduate Courses**

**Subject: STATISTICS**

**(Credit Based Semester and Grading System with effect from  
the academic year 2021–2022)**

## **The Rational:**

### **Why study Statistics?**

In today's world, data is exploding, and Data Analysis is the buzz word in all disciplines. Statistics deals with the study of data and acts as a pathway to understand and process data in order to obtain meaningful results

### **What will I study?**

Over the three years of undergraduate studies the course teaches students techniques of:

- Methods of Data Collection
- Organization and Visualization of Data
- Techniques of Data Analysis
- Valid Interpretation of Results.

### **Why should I choose Statistics at Xavier's?**

The Department is committed to:

- Connecting theoretical concepts of Statistics with its applications.
- Train students with knowledge of software to aid Data Analysis..
- Equip students with analytical skills required in the Corporate world

### **Interdisciplinary approach in Statistics:**

- Conducts a 3-year Undergraduate Arts Programme: Economics–Statistics
- Includes students from the Physics stream in the First Year of the B.Sc (Statistics) Programme.
- Includes students from the Mathematics stream in the First & Second Year of the B.Sc (Statistics) Programme
- Conducts a basic Statistics course for Non-Statistics students under the Cross-Faculty Programme of the College.

**List of Courses offered for FY SY TY in STATISTICS**

<b>SCIENCE (ODD – SEMESTER)</b>			
<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Course Credits</b>
1.	SSTA0101	<b>Descriptive Statistics (A)</b>	2
2.	SSTA0102	<b>Statistical Methods (A)</b>	2
3.	SSTA01PR	<b>Statistical Practicals-I</b>	2
4.	SSTA0301	<b>Probability &amp; Sampling Distribution (A)</b>	2
5.	SSTA0302	<b>Sampling Techniques</b>	2
6.	SSTA0303	<b>Operations Research</b>	2
7.	SSTA03PR	<b>Statistical Practicals-III</b>	3
8.	SSCS0301	<b>Scientific Communication Skills</b>	1
9.	SSTA0501	<b>Probability Theory</b>	4
10.	SSTA0502	<b>Statistical Estimation</b>	4
11.	SSTA0503	<b>Applied Statistics (IA)</b>	4
12.	SSTA0504	<b>Applied Statistics (IIA)</b>	4
13.	SSTA05PR	<b>Statistical Practicals-V</b>	8
14.	SSTA05AC	<b>Statistical Computing Using R</b>	4
15.	SSTA05ACPR	<b>Applied Component Practicals-V</b>	2

**SCIENCE (EVEN – SEMESTER)**

<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Course Credits</b>
1.	SSTA0201	<b>Descriptive Statistics (B)</b>	2
2.	SSTA0202	<b>Statistical Methods (B)</b>	2
3.	SSTA02PR	<b>Statistical Practicals-II</b>	2
4.	SSTA0401	<b>Probability &amp; Sampling Distribution (B)</b>	2
5.	SSTA0402	<b>Analysis of Variance &amp; Design of Experiments</b>	2
6.	SSTA0403	<b>Industrial Statistics</b>	2
7.	SSTA04PR	<b>Statistical Practicals-IV</b>	3
8.	SSCS0401	<b>Scientific Communication Skills</b>	1
9.	SSTA0601	<b>Probability Distributions &amp; Stochastic Processes</b>	4
10.	SSTA0602	<b>Statistical Inference</b>	4
11.	SSTA0603	<b>Applied Statistics (IB)</b>	4
12.	SSTA0604	<b>Applied Statistics (IIB)</b>	4
13.	SSTA06PR	<b>Statistical Practicals-VI</b>	8
14.	SSTA06AC	<b>Optimization Methods in Operations Research</b>	4
15.	SSTA06ACPR	<b>Applied Component Practicals-VI</b>	2

<b>ARTS (ODD – SEMESTER)</b>			
<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Course Credits</b>
1.	ASTA0101	<b>Descriptive Statistics (A)</b>	3
2.	ASTA01PR	<b>Statistics Practicals-I</b>	1
3.	ASTA0301	<b>Descriptive Statistics(B)</b>	2
4.	ASTA0302	<b>Operations Research</b>	2
5.	ASTA03PR	<b>Statistics Practicals-III</b>	2
6.	ASTA0501	<b>Probability &amp; Sampling Distribution (A)</b>	3
7.	ASTA0502	<b>Sampling Techniques</b>	3
8.	ASTA0503	<b>Applied Statistics (A)</b>	3
9.	ASTA05PR	<b>Statistics Practicals-V</b>	5
<b>ARTS (EVEN – SEMESTER)</b>			
<b>Sr. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Course Credits</b>
1.	ASTA0201	<b>Statistical Methods (A)</b>	3
2.	ASTA02PR	<b>Statistics Practicals-II</b>	1
3.	ASTA0401	<b>Statistical Methods (B)</b>	2
4.	ASTA0402	<b>Data Analysis</b>	2
5.	ASTA04PR	<b>Statistics Practicals-IV</b>	2
6.	ASPC0404	<b>Descriptive Statistics</b>	3
7.	ASTA0601	<b>Probability &amp; Sampling Distribution (B)</b>	3

8.	ASTA0602	<b>Analysis of Variance &amp; Design of Experiments</b>	3
9.	ASTA0603	<b>Applied Statistics (B)</b>	3
10.	ASTA06PR	<b>Statistics Practicals-VI</b>	5

**Compositition of the Board of Studies (2021-22) – Department of STATISTICS**

The Department of **STATISTICS** has the following BOS composition:

<b>Sr. No.</b>	<b>Composition</b>	<b>Name</b>
1	Head of the Department (Chairman)	Mr. Saju V. George
2	Entire faculty of each specialization	Ms. Ayesha Dias Dr. S. Annapurna Ms. Piyali Unnikrishnan Mr. Mayur More Mr. Mangesh Kutekar Ms. Chhaya Panday
3	Two subject experts (other University)	Dr. Rita Abbi 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	---

**Revision History: FYBA**

<b>Course Code</b>	<b>Title of the Paper</b>	<b>Revision</b>	<b>Original</b>	<b>Revised</b>	<b>% Change</b>	<b>Date -month-year of Revision</b>
<b>Changes were made to the existing Mumbai University Syllabus as follows:</b>						
ASTA0101	Descriptive Statistics (A)	1 <sup>st</sup>			30%	22-02-2014
		2 <sup>nd</sup>			30%	16-07-2016
		3 <sup>rd</sup>			1%	31-08-2019 (eff 2020-21)
ASTA01PR	Statistics Practical-I	1 <sup>st</sup>			5%	22-02-2014
ASTA0201	Descriptive Statistics (B)	1 <sup>st</sup>			15%	17-08-2010
		2 <sup>nd</sup>			30%	22-02-2014
		3 <sup>rd</sup>			100%	16-07-2016 (eff 2017-18)

**Revision History: SYBA**

<b>Course Code</b>	<b>Title of the Paper</b>	<b>Revision</b>	<b>Original</b>	<b>Revised</b>	<b>% Change</b>	<b>Date -month-year of Revision</b>
<b>Changes were made to the existing Mumbai University Syllabus as follows:</b>						
ASTA0301	Statistical Methods (A)	1 <sup>st</sup>			3%	16-12-2010
		2 <sup>nd</sup>			100%	16-07-2016 (eff 2018-19)
ASTA0302	Operations Research	1 <sup>st</sup>			30%	16-12-2010
		2 <sup>nd</sup>			3%	24-01-2015
ASTA03PR	Statistical Practical-III	1 <sup>st</sup>			5%	24-01-2015
ASTA0401	Statistical Methods (B)	1 <sup>st</sup>			1%	16-12-2010

<b>ASTA0402</b>	<b>Data Analysis</b>	<b>1<sup>st</sup></b>			<b>2%</b>	<b>16-12-2010</b>
		<b>2<sup>nd</sup></b>			<b>30%</b>	<b>24-01-2015</b>
<b>ASPC0404</b>	<b>Descriptive Statistics</b>		<b>Introduced in 2011</b>			

### Revision History: TYBA

<b>Course Code</b>	<b>Title of the Paper</b>	<b>Revision</b>	<b>Original</b>	<b>Revised</b>	<b>% Change</b>	<b>Date -month-year of Revision</b>
<b>Changes were made to the existing Mumbai University Syllabus as follows:</b>						
<b>ASTA0501</b>	<b>Probability &amp; Sampling Distributions (A)</b>	<b>1<sup>st</sup></b>			<b>30%</b>	<b>16-07-2016 (eff 2019-20)</b>
<b>ASTA0502</b>	<b>Sampling Techniques</b>	<b>1<sup>st</sup></b>			<b>30%</b>	<b>17-09-2011</b>
<b>ASTA0503</b>	<b>Applied Statistics (A)</b>	<b>1<sup>st</sup></b>			<b>10%</b>	<b>20-02-2016</b>
<b>ASTA0601</b>	<b>Probability &amp; Sampling Distributions (B)</b>	<b>1<sup>st</sup></b>			<b>5%</b>	<b>25-02-2012</b>
		<b>2<sup>nd</sup></b>			<b>30%</b>	<b>16-07-2016 (eff 2019-20)</b>
<b>ASTA0602</b>	<b>Analysis of Variance &amp; Design Of Experiments</b>	<b>1<sup>st</sup></b>			<b>2%</b>	<b>25-02-2012</b>
<b>ASTA0603</b>	<b>Applied Statistics (B)</b>	<b>1<sup>st</sup></b>			<b>15%</b>	<b>25-02-2012</b>
		<b>2<sup>nd</sup></b>			<b>10%</b>	<b>20-02-2016</b>



### Revision History: FYBSc

Course Code	Title of the Paper	Revision	Original	Revised	% Change	Date -month-year of Revision
<b>Changes were made to the existing Mumbai University Syllabus as follows:</b>						
<b>SSTA0101</b>	<b>Descriptive Statistics (A)</b>	<b>1<sup>st</sup></b>			<b>30%</b>	<b>22-02-2014</b>
		<b>2<sup>nd</sup></b>			<b>30%</b>	<b>24-01-2015</b>
<b>SSTA0102</b>	<b>Statistical Methods (A)</b>	<b>1<sup>st</sup></b>			<b>1%</b>	<b>17-08-2010</b>
<b>SSTA01PR</b>	<b>Statistical Practical-I</b>	<b>1<sup>st</sup></b>			<b>5%</b>	<b>22-02-2014</b>
<b>SSTA0201</b>	<b>Descriptive Statistics (B)</b>	<b>1<sup>st</sup></b>			<b>30%</b>	<b>22-02-2014</b>
		<b>2<sup>nd</sup></b>			<b>30%</b>	<b>24-01-2015</b>
<b>SSTA0202</b>	<b>Statistical Methods (B)</b>	<b>1<sup>st</sup></b>			<b>15%</b>	<b>22-02-2014</b>

**Revision History: SYBSc**

<b>Course Code</b>	<b>Title of the Paper</b>	<b>Revision</b>	<b>Original</b>	<b>Revised</b>	<b>% Change</b>	<b>Date -month-year of Revision</b>
<b>Changes were made to the existing Mumbai University Syllabus as follows:</b>						
<b>SSTA0301</b>	<b>Probability &amp; Sampling Distributions (A)</b>	<b>1<sup>st</sup></b>			<b>30%</b>	<b>16-07-2016 (eff 2018-19)</b>
<b>SSTA0303</b>	<b>Operations Research</b>	<b>1<sup>st</sup></b>			<b>30%</b>	<b>16-12-2010</b>
<b>SSCS0301</b>	<b>Scientific Communication Skills</b>		<b>Newly Introduced</b>		<b>100%</b>	
<b>SSTA0401</b>	<b>Probability &amp; Sampling Distributions (B)</b>	<b>1<sup>st</sup></b>			<b>1%</b>	<b>16-12-2010</b>
		<b>2<sup>nd</sup></b>			<b>30%</b>	<b>16-07-2016 (eff 2018-19)</b>
<b>SSTA0402</b>	<b>Analysis of Variance &amp; Design of Experiments</b>	<b>1<sup>st</sup></b>			<b>2%</b>	<b>16-12-2010</b>
					<b>1%</b>	<b>24-01-2015</b>
<b>SSTA0403</b>	<b>Industrial Statistics</b>	<b>1<sup>st</sup></b>			<b>1%</b>	<b>16-12-2010</b>
<b>SSCS0401</b>	<b>Scientific Communication Skills</b>		<b>Introduced in 2011</b>			

### Revision History: TYBSc

Course Code	Title of the Paper	Revision	Original	Revised	% Change	Date -month-year of Revision
SSTA0501	Probability Theory	1 <sup>st</sup>			3%	17-09-2011
		2 <sup>nd</sup>			3%	11-08-2018 (eff 2019-20)
SSTA0502	Statistical Estimation	1 <sup>st</sup>			2%	11-08-2018 (eff 2019-20)
SSTA0503	Applied Statistics (I-A)	1 <sup>st</sup>			7%	17-09-2011
		2 <sup>nd</sup>			5%	20-02-2016
		3 <sup>rd</sup>			3%	11-08-2018 (eff 2019-20)
SSTA0504	Applied Statistics (II-A)	1 <sup>st</sup>			12%	20-02-2016
SSTA05AC	Statistical Computing using R		Newly Introduced in 2021-22		100%	27-03-2021
SSTA05ACPR	Applied Component Practical-V		Newly Introduced in 2021-22		100%	27-03-2021
SSTA0601	Probability Distributions & Stochastic Processes	1 <sup>st</sup>			10%	25-02-2012
SSTA0602	Statistical Inference	1 <sup>st</sup>			5%	20-02-2016
		2 <sup>nd</sup>			1%	11-08-2018
SSTA0603	Applied Statistics (I-B)	1 <sup>st</sup>			12%	25-02-2012
		2 <sup>nd</sup>			1%	11-08-2018 (eff 2019-20)

<b>SSTA0604</b>	<b>Applied Statistics (II-B)</b>	<b>1<sup>st</sup></b>			<b>3%</b>	<b>25-02-2012</b>
		<b>2<sup>nd</sup></b>			<b>10%</b>	<b>20-02-2016</b>
		<b>3<sup>rd</sup></b>			<b>7%</b>	<b>11-08-2018 (eff 2019-20)</b>
<b>SSTA06AC</b>	<b>Optimization Methods in Operations Research</b>		<b>Newly Introduced in 2021-22</b>		<b>100%</b>	<b>28-08-2021</b>
<b>SSTA06ACPR</b>	<b>Applied Component Practical-VI</b>		<b>Newly Introduced in 2021-22</b>		<b>100%</b>	<b>28-08-2021</b>

**Programme Specific Outcomes (PSO) - Statistics**

<b>Sr. No.</b>	<b>On completing B.Sc. Statistics (Science), the student will be able to:</b>
PSO 1	Recognize the importance and value of statistical thinking, training and approach to problem solving.
PSO 2	Recognize and appreciate the connection between theory and applications in a variety of disciplines.
PSO 3	Have the confidence to review statistical literature available in survey articles, scholarly books and online sources.
PSO 4	Use statistical techniques to work effectively in analytical, scientific, financial, actuarial, pharmaceutical, technical and other positions of government/non-government organizations.
PSO 5	Pursue academic research to widen the subject domain.
PSO 6	Be familiar with problem solving techniques.
PSO 7	Apply theoretical concepts to practical situations.
PSO 8	Use software to aid problem solving.