Department of Statistics
Pirojpur Science and technology University

B Sc (Honors) in Statistics Program (Overview)

The 4-year B.Sc. (Honors) in Statistics is designed to build a strong foundation in statistical theory, data analysis, mathematical tools, economics, econometrics, computing skills, and real-world applications. Across eight semesters, students' progress from fundamental concepts to advanced statistical modeling and research.

Key Learning Areas by Semester:

1st Year (Semesters 1 & 2): Foundations
- **Core Areas:** Basic statistics, probability, calculus, economics, and linear algebra.
- **Skills:** Communicative English, MS Office applications, and C++ programming.
- **Focus:** Developing fundamental understanding and hands-on lab experience in data handling and computation.

2nd Year (Semesters 3 & 4): Statistical Theory & Applications
- **Core Areas:** Sampling, inference, demography, operations research, and real analysis.
- **Skills:** Python programming for data analysis.
- **Focus:** Statistical modeling, data interpretation, and application in population studies and decision-making.

3rd Year (Semesters 5 & 6): Specialized Techniques & Data Analytics
- **Core Areas:** Regression, time series, categorical data, actuarial statistics, multivariate analysis, experimental design, and meta-analysis.
- **Skills:** R, SPSS, research methodology, and field work.
- **Focus:** Industrial applications, official statistics, robust methods, and diagnostics.

4th Year (Semesters 7 & 8): Advanced Topics & Research
- **Core Areas:** Epidemiology, lifetime data analysis, Bayesian methods, stochastic processes, econometrics, machine learning, simulation, and bioinformatics.
- **Skills:** Use of STATA, research project development.
- **Focus:** Advanced modeling, real-world problem-solving, and independent research.

Total Credit Hours: 160

Program Highlights:
- **Balanced mix** of theory and practical labs each semester
- **Emphasis on software skills** (MS Excel, C++, Python, R, SPSS, STATA)
- **Exposure to modern statistical areas** like AI, bioinformatics, Data science, and machine learning
- **Research and field work components** for real-world experience
- **Comprehensive viva-voce and project work** in final semesters

This structured program prepares students for careers in data science, research, policy analysis, public health, industry (banking), and further academic pursuits.

Details:

Semester-wise course outline for the 4-year B Sc (Honors) program (Session-2024-2025)

First Semester		
Course Code	**Course Name**	**Credit Hour**
STAT- 1101	Basic Statistics	3.0
STAT- 1102	Theory of Probability	3.0
STAT- 1103	Basic Mathematics and Statistical Indices	2.0
STAT- 1104	Numerical Analysis & Computer Applications in Statistics	3.0
MATH- 1101	Differential & Integral Calculus	3.0
ENG-1101	Communicative English	Non-Credit
STAT-1105	Basic Statistics (Lab)	1.0
STAT-1106	Numerical Analysis and Data Analysis b MS applications (Lab)	1.0
Total		**16.0**
Second Semester		
STAT- 1201	Probability Distribution	3.0
MATH-1202	Linear Algebra	3.0
ECON-1201	Principles of Economics	3.0
MATH- 1203	Advanced Calculu	2.0
GEHE-1201	History of Emergence of Bangladesh	3.0
STAT-1202	Data Analysis by C++ (Lab)	1.0
STAT- 1203	Viva Voce	2.0
Total		**17.0**
Third Semester		
STAT- 2101	Sampling Distribution and Order Statistics	3
STAT- 2102	Sampling Techniques-I	2
STAT- 2103	Demography	3
ECON -2102	Development Economics	3
STAT- 2104	Statistical Inference-I	3
MATH 2104	Real Analysis	2
STAT- 2105	Demography (Lab)	1
STAT- 2106	Statistical Inference-I (Lab)	1
STAT 2107	Data Analysis by Python (Lab)	1
Total		**19**
Fourth Semester		
STAT 2201	Sampling Techniques-II	3
STAT 2202	Statistical Inference-II	3
STAT 2203	Operations Research	3
MATH 2205	Ordinary Differential Equations	3

FIN-2201	Financial Statistics	3
STAT 2204	Sampling Techniques (Lab)	1
STAT 2205	Statistical Inference-II (Lab)	1
STAT 2206	Operations Research (Lab)	1
STAT 2207	Viva Voce	2
Total		**20**
Fifth Semester		
STAT 3101	Regression Analysis	3
STAT 3102	Actuarial Statistics	3
STAT 3103	Time Series Analysis	3
STAT3104	Industrial and Official Statistics	3
STAT 3105	Categorical Data Analysis	3
COM-3101	Artificial Intelligence in Statistics	2
STAT 3106	Data Analysis by R Programming (Lab)	2
STAT 3107	Regression Analysis-I (Lab)	1
STAT 3108	Industrial Statistics (Lab)	1
STAT-3109	Time Series Analysis (Lab)	1
Total		**22**
Sixth Semester		
STAT 3201	Multivariate Analysis-I	3
STAT 3202	Design of Experiments-I	3
STAT 3203	Robust Statistics & Diagnostics	3
STAT 3204	Statistical Methods for Meta Analysis	3
STAT 3205	Research Methodology	3
STAT-3206	Field Work	2
STAT 3207	Data Analysis by SPSS (Lab)	1
STAT 3208	Multivariate Analysis-I(Lab)	1
STAT 3209	Design of Experiments-I (Lab)	1
STAT 3210	Viva Voce	2
Total		**22**
Seventh Semester		
ECON 4103	Applied Econometrics	3
COM 4102	Statistical Machine Learning	3
STAT 4101	Epidemiology	3
STAT 4102	Multivariate Analysis-II	3

STAT 4103	Lifetime Data Analysis-I	3
STAT 4104	Advanced Probability and Stochastic Process	3
STAT 4105	Applied Econometrics (Lab)	1
STAT 4106	Epidemiology (Lab)	1
STAT 4107	Multivariate Analysis-II (Lab)	1
STAT 4108	Data Analysis with STATA(Lab)	1
Total		**22**
Eight Semester		
STAT 4201	Design of Experiments-II	3
STAT 4202	Decision Theory and Bayesian Methods	3
STAT 4203	Lifetime Data Analysis-II	3
STAT 4204	Modeling & Statistical Simulation	2
STAT 4205	Bioinformatics	3
STAT 4206	Design of Experiment-II (Lab)	1
STAT 4207	Lifetime Data Analysis-II (Lab)	1
STAT 4208	Bioinformatics (Lab)	1
STAT 4209	Viva Voce	2
STAT 4210	Research Project	3
Total		**22**
Grand Total		**160**