

Course Code	Course Name	Credits
26EC004	STATISTICAL ECONOMICS AND AI	04

Course Objectives

- To enable students to explain and understand the fundamental concepts of statistical analysis in economics.
- To describe and apply measures of central tendency and application of AI
- Apply measure of dispersion in different dataset
- Understand the time series analysis, and use of AI in different types of trend and index number
- To analyze and evaluate correlation and regression and the role of Artificial Intelligence (AI) in modernizing data analysis and apply intelligent modeling techniques for economic data. paragraph

Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Explain and apply the principal steps involved in data collection and sampling analysis.
- Transform and analyze raw data into meaningful information for decision-making.
- To evaluate raw data using standard deviation and interpret the result in real world.
- Analyze and interpret time series data to understand trends in various economic activities.
- Analyze and evaluate Regression and correlation and the use of Artificial Intelligence (AI) tools to handle complex datasets, enhance pattern recognition, and generate predictive insights.

Unit 1 – Introduction To Statistics (12Hrs)

Meaning of statistics, importance of statistical data in economics and its limitations, frequency distribution, techniques of data collection- primary and secondary data presentation of data: graphical and diagrammatic presentation of data, tabulation of data. Sampling vs. population. introduction of AI in statistics- importance and its limitations

Unit 2 – Measure of Central Tendency (12Hrs)

Mean- individual, discrete and continuous series, median- individual, discrete and continuous series, mode- individual, discrete and continuous series, application of AI in different types of measure of central tendency

Unit 3 – Measure of Dispersion (12Hrs)

Different measures of dispersion- range, quartile deviation, mean deviation, standard deviation, variance and coefficient of variation, skewness and kurtosis. Use of AI in measure of dispersion.

Unit 4 – Time Series and Index Number (12Hrs)

Time series analysis- concept and components, measurement of trend, determination of seasonal variations. index numbers- concept, methods of constructing index numbers (Laspeyers, Paaches and Fishers index, family budget method, chain index numbers), problems in construction and limitation of index numbers. AI and time series analysis

Unit 5 –Correlation and Regression (12Hrs)

Concept of correlation, coefficient of correlation – Karl Pearson and rank correlation, concept of regression, regression – linear and multiple regression equations. application of AI in correlation and regression

Reference Books:

1. Mathematics for Economists- Mehta Madnani, Sultan Chand & Son, 9th Edition 2008.
2. Statistical Methods- S.P Gupta, Sultan Chand & Sons, 42nd Revised Edition (2012).
3. Mathematics & Statistics for Economics- G.S Monga, Vikas Publishing House Pvt, Ltd, 2nd Revised Edition (2009).
4. Comprehensive Statistical Methods: P.N Arora, SumeetArora, S.Arora, S.Chand& Company, 4th Revised Edition (2012).
5. Artificial intelligence and statistics: Dr. S. Gayathri Devi, Dr. K.R Manjula.

Websites and eLearning Sources:

1. <https://www.geeksforgeeks.org/maths/introduction-to-statistics/>
2. <https://www.statskingdom.com/>
3. <https://www.socscistatistics.com/>
4. <https://www.researchgate.net/publication/386449263>

COs and Bloom's Taxonomy Mapping – 26EC004

Course Outcomes	On successful completion of this course, students will be able to	BTL
CO1	Recall and describe fundamental concepts, importance and limitations of statistics and Identify basic AI techniques used in statistical analysis.	K1, K2,K3
CO2	Applying different types of measure of central tendency in the real world and apply AI in different types of measures of central tendency	K3,K4
CO3	Analyze types of dispersion and use AI and dispersion measures (range, variance, standard deviation) to analyze variability.	K3,K4
CO4	Evaluate time series and index number and the effectiveness of index numbers and forecasting models in economic analysis and use of AI in the model.	K4,K5
CO5	To describe and apply regression and correlation to study different types of economic variables and application of AI in the concept	K6

BTL (Bloom's Taxonomy Level) - K1 – Remembering, K2 – Understanding, K3- Applying, K4 – Analyse, K5- Evaluate and K6 - Create

Relationship Matrix – 26EC004

Course Outcomes	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	2	2	2	2	2	2	3	2	2.18
CO2	3	2	2	3	2	3	2	3	1	2	2	2.27
CO3	2	1	3	2	2	1	2	2	2	3	1	2.00
CO4	2	2	2	2	1	2	2	1	3	2	2	2.00
CO5	3	2	3	3	2	3	3	3	3	3	3	2.81
Total												2.25

Mean Score: 3- High, 2- Medium/Moderate, 1-Low

