B.Sc. Degree Program
Faculty of Applied Sciences
University of Sri Jayewardenepura

Course Title	Descriptive Statistics
Course Code	STA 1132
Credit Value	02
Status	Core
Year / Level	Year 1
Semester	1
Theory: Practical: Independent Learning	30: 00:70
Other: Pre-requisite Course/s	None

Aim of the Course:

The aim of this course unit is to introduce basic concepts and techniques used in descriptive statistics.

Intended Learning Outcomes (ILOs):

On the successful completion of this course, the student should be able to:

1 Explain the concepts and techniques related to descriptive statistics
2 Apply the concepts and techniques related to descriptive statistics in solving real life problems.
3 Demonstrate clear and coherent communication skills using summary measures, tables, graphs, and charts
4 Demonstrate ability of active team work to produce simple statistical reports
5 Critically analyze data and statistical reports and interpret results

Course Content:

1. **I**ntroduction to Statistics

   - Definition of statistics
   - Role of statistics in society
   - History of statistics, Branches of statistics
   - Scope and limitations of statistics
   - Terminology used in statistics

2. Data Collection

   - Steps of data collection
   - Observational and experimental studies
   - Primary and secondary data
   - Population and sample
   - Sampling
   - Methods of collecting data

3. Exploring, Summarization and Presentation of Data

- Types of data
- Scales of measurements
- Exploring data (one way and two-way frequency tables, box plots, stem and leaf plots, histograms, scatter plots, time series plots)
- Classification of data
- Desirable properties of a summary measure
- Measures of central tendency (mean, median, mean, weighted mean, harmonic mean, geometric mean, Quadratic mean)
- Measures of dispersion (range, Inter quartile range, quartile deviation, variance, standard deviation)
- Skewness and its measures of skewness (Pearson's and Bowley's)
- Kurtosis
- Association between two variables (cross tabulation, Pearson's product moment correlation coefficient, Spearman's rank correlation coefficient)
- Tables (one way and two-way frequency tables, tables of summary measures)
- Charts (simple and multiple, component, percentage component bar charts, pie charts, pictograms)
- Graphs (line graphs, area graphs)
- Misuse of statistics

Session Breakdown and Learning Activities:

Topic No.	Topic / Sub Topic	No. of Hrs.			Teaching Method	Assessment Criteria	ILO Alignment
		Teaching	Practical	Independent Learning			
1.1	Definition of statistics, Role of statistics in society, History of statistics	2	0	5	Lecture / Handout/ Exercises		1
1.2	Branches of statistics, Scope and limitations of statistics, Terminology used in statistics	2	0	5	Lecture / Handout/Group discussion		1
2.1	Steps of data collection, Observational and experimental studies	2	0	5	Lecture/ Handout / Group Assignment	10% Final Marks	1, 2
2.2	Population and sample, Sampling	2	0	5	Lecture / Handout / Discussions		1, 2
2.3	Methods of collecting data	2	0	6	Lecture/ Handout/Discussions		1, 2
3.1	Types of data, Scales of measurements	2	0	6	Lecture / Handout/ Discussions		1, 2, 3, 4
3.2	Exploring data (one way and two way frequency tables), Charts (simple and multiple, component, percentage component bar	2	0	5	Lecture/ Handout / Discussions		1, 2, 3, 4

	charts, pie charts, pictograms)						
3.3	Exploring data (box plots, stem and leaf plots, histograms, scatter plots, time series plots), Graphs (line graphs, area graphs), Classification of data	2	0	5	Lecture / Handout/ Mid-semester examination	20% Final Marks	1, 2, 4
3.4	Desirable properties of a summary measure, Measures of central tendency (mean, median, mean, weighted mean, harmonic mean, geometric mean, Quadratic mean)	3	0	8	Lecture / Handout/ Discussions		1, 2, 4
3.5	Measures of dispersion (range, Inter quartile range, quartile deviation, variance, standard deviation)	3	0	6	Lecture / Handout/ Discussions		1, 2, 4
3.6	Skewness and its measures (Pearson's and Bowley's), Kurtosis	3	0	4	Lecture / Handout/ Discussions		1, 2, 4
3.7	Association between two variables (cross tabulation, Pearson's product moment correlation coefficient, Spearman's rank correlation coefficient)	3	0	6	Lecture / Handout / Discussions		1, 2, 3, 4
3.8	Misuse of statistics Revision/problem solving	2	0	4	Lecture / Handout/ Discussions		1,2, 3, 5
	Total	30	00	70			

Program Learning Outcomes:

Upon successful completion of the B.Sc. degree programme, a graduate will be able to,

1. Demonstrate competency in theoretical knowledge and practical and/or technical skills in respective subject areas
2. Communicate efficiently and effectively in the respective field of study using written, oral, visual and/or electronic forms.
3. Facilitate and participate as an empathetic and emotionally intelligent team player with leadership qualities, in a group, diverse team or organization.
4. Apply subject knowledge and skills creatively in making appropriate judgments in changing situations.
5. Integrate creativity and innovation to achieve entrepreneurial competencies.
6. Implement solutions in keeping with ethical, societal and environmental norms and need for sustainable development.
7. Secure lifegoals through lifelong learning with the aim of strengthening professional skills, and ensuring the betterment of the community.

Linking Program Learning Outcomes with ILOs:

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
ILO 1	***	*		**		*	*
ILO 2	***	*	*	***	*	*	*
ILO 3	***	***	***	**	*	*	*
ILO 4	***	***	***	***	**	**	**
ILO 5	***	**	**	***	***	***	**

*** - *Strongly Linked;* ** - *Medium linked;* * *Weakly linked*

Mode of Assessment:

Formative Assessment (FA): Group assignment: 10% of the total marks
Mid semester examination: 20% of the total marks

Summative Assessment (SA): End semester examination: 70% of the total marks

References:

i. Black, Ken, John Asafu-Adjaye, P. Black, Nazim Khan, Gerard King, Nelson Perera, Carl Sherwood, Reeta Verma, and Saleh Wasimi. *Australasian business statistics*. CQ University, 2013.

ii. Gupta, S. C., and V. K. Kapoor. *Fundamentals of mathematical statistics*. Sultan Chand & Sons, 2020.

iii. Talagala, T. S. (2025). Course website: STA 1132 Descriptive Statistics, https://thiyangt.github.io/DescriptiveStatistics25/