Learning outcomes: Chapter 3

- 1. You should understand the terms random variable, population, observation, data and sample.
- 2. You should know the difference between *qualitative* and *quantitative data*, and you should understand that quantitative data can be further subdivided into *discrete* data and *continuous* data. You should also be familiar with the terms *ordinal data*, *categorical data* and *count data*.
- **3.** You should be able to give a brief description, an example, and advantages/disadvantages of the following sampling schemes:
 - Random sampling: Simple random sampling; stratified random sampling;
 - Quasi-random sampling: Systematics sampling; multi-stage sampling;
 - Non–random sampling: Cluster sampling; judgemental sampling; accessibility sampling; quota sampling.
- 4. You should be able to construct, and interpret, frequency/relative frequency tables for categorical, count and continuous data.
- 5. You should be able to construct, and interpret, the following graphical summaries for data. You should also know the advantages/disadvantages/limitations of each:
 - Stem-and-leaf plots
 - Bar charts
 - Histograms: frequency/frequency density; relative frequency; polygons
 - Ogives
 - Box–and–whisker plots
 - Others: multiple bar charts; pie charts; scatter plots; time series plots
- 6. You should be able to calculate the following numerical summaries of data:
 - Measures of average: arithmetic mean (from raw data/frequency table); median; mode (and modal class from grouped data)
 - Measures of spread: range; inter-quartile range; variance/standard deviation (from raw data/frequency table)

You should also know when it is appropriate to use one numerical summary over another.