



Course Outline (Higher Education)

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| School: | Federation Business School |
| Course Title: | QUANTITATIVE FOUNDATIONS AND NUMERICAL ANALYSIS |
| Course ID: | BUHON4005 |
| Credit Points: | 15.00 |
| Prerequisite(s): | Nil |
| Co-requisite(s): | Nil |
| Exclusion(s): | Nil |
| ASCED: | 080300 |

Description of the Course :

Students are introduced firstly to data measurement, data models, probability distributions and forms of data presentation. Sampling, sample distributions and statistical inference including hypothesis testing are then described. The course concludes with descriptions of correlation-based methods including ANOVA, regression and factoring, time series techniques, categorical data analysis and nonparametric statistics. Applied statistical methods or analytical techniques for econometric modelling, structural equation modelling, discriminant analysis, cluster analysis or others may be described according to student research requirements

Grade Scheme: Graded (HD, D, C, etc.)

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

| Level of course in Program | AQF Level of Program | | | | | |
|----------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| | 5 | 6 | 7 | 8 | 9 | 10 |
| Introductory | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Intermediate | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Advanced | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Learning Outcomes:

Knowledge:

- K1.** Describe fundamental concepts in numerical data analysis including data forms, sampling and hypothesis testing
- K2.** Explain basic statistical approaches to analysing data to answer various research questions
- K3.** Compare and contrast statistical methods with respect to assumptions, limitations and interpretation of results

Skills:

- S1.** Construct summary models appropriate for the data and research purpose
- S2.** Identify numerical sampling techniques for inferential statistical analysis and hypothesis testing
- S3.** Determine suitable statistical methods and techniques to answer research questions for a range of data contexts

Application of knowledge and skills:

- A1.** Report and present data models summarising numerical distributions
- A2.** Devise and implement a sampling framework designed to answer a specified research question
- A3.** Apply analytical techniques to a data set with results reported in the context of key assumptions, findings, and limitations

Course Content:

- Basic numerical analysis including probability distributions and suitable forms of data presentation
- Sampling from populations, statistical inference and hypothesis testing
- Quantitative methods and techniques including correlational analysis plus advanced techniques

Values:

- V1.** The importance of understating the foundation of numerical analysis
- V2.** Appreciation of statistical methods for making inferences about populations
- V3.** The importance of quantitative methods for answering applicable research questions

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the Higher Education Graduate Attributes Policy (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

| Graduate attribute and descriptor | Development and acquisition of GAs in the course |
|-----------------------------------|--|
|-----------------------------------|--|

| Graduate attribute and descriptor | | Development and acquisition of GAs in the course | | | |
|-----------------------------------|--|--|---|-----------------------|--|
| | | Learning Outcomes (KSA) | Code A. Direct B. Indirect N/A Not addressed | Assessment task (AT#) | Code A. Certain B. Likely C. Possible N/A Not likely |
| GA 1 Thinkers | Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions. | K1, K2, K3, S3, A2, A3 | A | AT2, AT3 | A |
| GA 2 Innovators | Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change. | K3, S2, S3, A3 | B | AT3 | B |
| GA 3 Citizens | Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately. | K3, S3, A2, A3 | B | AT2, AT3 | B |
| GA 4 Communicators | Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand. | K2, K3, S2, S3, A1, A2, A3 | A | AT2, AT3 | A |
| GA 5 Leaders | Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices. | K1, K2, K3, S1, S2, S3, A1, A2, A3 | A | AT1, AT2, AT3 | A |

Learning Task and Assessment:

| Learning Outcomes Assessed | Learning Tasks | Assessment Type | Weighting |
|----------------------------|--|-------------------------|-----------|
| K1, K3, S1, S3 | Self-paced online quiz | Short Answer | 10 - 20% |
| K1, K2, S1, S2, A1, A2 | Sampling plan and data analysis | Report and Presentation | 30 - 50% |
| K3, S2, S3, A3 | Quantitative method application and interpretation | Test | 40 - 60% |

Adopted Reference Style:

APA