

# Course Outline (Higher Education)

<b>School:</b>	School of Science, Psychology and Sports
<b>Course Title:</b>	DATA ANALYSIS AND APPLIED STATISTICS
<b>Course ID:</b>	SCOND6005
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	(HEASC4001)
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	Nil
<b>ASCED:</b>	069903

## Description of the Course :

This course is designed to investigate the collection, management, analysis, interpretation and presentation of data for various purposes applied to strength and conditioning. Purposes include athlete profiling, monitoring training, talent identification and applied research. The criteria for selecting appropriate tests such as reliability and validity are explored to provide a rationale for data collection. Students will learn to select tests, collect and manage data sets, analyse the data, interpret results, and report them in a meaningful way to coaches and athletes. Magnitude based statistics commonly used in strength and conditioning are also explored. Alongside this, students will be equipped to compare and contrast magnitude based statistics with traditional null hypothesis testing. This strength and conditioning specific course contributes to meeting the Data handling and management competency standard required for the ESSA Level 1 Sports Science accreditation.

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

## Work Experience:

No work experience: Student is not undertaking work experience in industry.

**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	■	■	■	■	■	■
Intermediate	■	■	■	■	✓	■
Advanced	■	■	■	■	■	■

### Learning Outcomes:

#### Knowledge:

- K1.** Analyse methods of assessing and monitoring physical qualities.
- K2.** Examine the criteria for selecting useful tests and monitoring tools.
- K3.** Detect error and its sources in selected tools.
- K4.** Evaluate the use of magnitude based statistics in strength and conditioning and contrast with traditional null hypothesis testing.
- K5.** Interpret contemporary statistical modelling methods used in the sports science literature (such as decision tree induction).

#### Skills:

- S1.** Generate and acquire training data commonly found in a strength and conditioning setting (eg. bar velocity, Rating of Perceived Exertion, Global Positioning System, flexibility).
- S2.** Analyse training data using magnitude based statistics (e.g. effects size, qualitative descriptors).
- S3.** Assemble and manage data sets using MS Excel.
- S4.** Evaluate methods for reporting data in a sports science setting.
- S5.** Evaluate the validity, reliability and smallest worthwhile change of performance tests.

#### Application of knowledge and skills:

- A1.** Apply a validity and reliability analysis to self-generated data.
- A2.** Translate the results derived from probabilistic statistical models into training strategies.
- A3.** Generate statistical reports from performance data such that it is easily interpreted by other sport science professionals.

#### Course Content:

- The role of testing and monitoring physical qualities
- Criteria for selecting useful tests eg. reliability and validity
- Data collection and understanding measurement error
- Management and storage of data collected on athletes
- Parametric and non-parametric statistical tests used in strength and conditioning
- Using statistical software to analyse data
- Calculating and interpreting magnitude based statistics
- Compare and contrast magnitude base statistics with traditional null hypothesis testing.
- Using statistics to answer an applied research question
- Meaningful interpretation and reporting results to coaches
- Reliability analysis on flexibility tests

**Values:**

- V1.** Appreciate the need to systematically prepare for data collection on athletes
- V2.** Appreciate error in measurement and the importance of controlling it and considering it when interpreting results
- V3.** Value the importance of using data to make objective training decisions

**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			
		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	A	AT1, AT2, AT3, AT5	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.	S1,A1	A	AT2, AT3	A
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.	A2	B	AT1	C
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.	A2,A3	A	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.	K3, K4, K5, S2, S3 S4, S5	B	AT3	B

**Learning Task and Assessment:**

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1, K2, K3, K4, K5, S1, S2, S4, S5	Students will engage and participate in practical sessions, group work and discussions addressing their comprehension and competency of the content.	Class participation	S/U
K3, K4, S1, S2, S3, S4, A3	Analyse, interpret and present training data in a manner that is interpretable by a coach in a strength and conditioning setting.	Assignment	20-30%
K2, K3, K4, S2, S3, S4, S5, A1	Flexibility test study: Students will be required to acquire data then interpret for validity, reliability and meaningful change.	Laboratory report	30-50%
K1, K2, K3, K4, K5, S2, A2	Understanding, interpretation and written communication of material presented in all classes and on-line	Written exam short answer and multiple choice	25-45%

**Adopted Reference Style:**

Other (Journal of Strength and Conditioning Research )