F77SA Introduction to Statistical Science A

COURSE DETAILS
Course Code: F77SA
Full Course Title: Introduction to Statistical Science A
SCQF Level: 7
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL
Undergraduate: Yes Postgraduate Taught: Yes Postgraduate Research: No

Additional Information:

COURSE AIMS

• To provide an introduction to statistical science
• To develop the ability to understand and describe data using various graphical and numerical methods

LEARNING OUTCOMES – SUBJECT MASTERY

• Understand the role and use of statistics in real life and realise the purpose of statistical science
• Distinguish between populations and samples and between population parameters and statistics
• Be familiar with various sampling methods and be able to design sampling regimes for simple studies
• Explain the differences between data collected from experiments and observational studies
• Distinguish between different types of data
• Understand, interpret and describe data using appropriate graphical displays
• Calculate numerical summaries of data and interpret them as measures of location and variation
• Explore the relationships between two variables using scatter-plots and cross-tabulation
• Calculate the sample correlation coefficient and understand its meaning
• Appreciate issues related to the concepts of association and causation
• Understand the role of probability models in statistical inference
• Use computer software (Excel) to produce graphical and numerical summaries of data

LEARNING OUTCOMES – PERSONAL ABILITIES

At the end of the course, students should be able to:

• Demonstrate the ability to learn independently
• Manage time work to deadlines and prioritise workloads
• Use an appropriate computer package to present and describe data
• Present results in a way which demonstrates that they have understood the technical and broader issues of data collection and description

SYLLABUS

• Introduction to the concept of statistics: the role and purpose of statistical science

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- Collecting data: sampling and sampling distributions; experiments; observational studies; types of data
- Describing and understanding data: graphical and numerical summaries
- Describing and understanding data from two-dimensional populations: graphical exploration; the sample correlation coefficient; association and causation
- *Informal* introduction to probability models and to confidence intervals (for population mean) and statistical tests (including the interpretation of P-values).

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LOCATION AND ASSESSMENT METHODS

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