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
• 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).

### COURSE RELATIONSHIPS

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<th>Level</th>
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<th>School</th>
<th>Type</th>
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### LOCATION AND ASSESSMENT METHODS

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