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
F77SA Introduction to Statistical Science A

- 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Level</th>
<th>Title</th>
<th>School</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>F77SB</td>
<td>7</td>
<td>Introduction to Statistical Science B</td>
<td>School of Math and Comp Sci.</td>
<td>Linked</td>
</tr>
</tbody>
</table>

### LOCATION AND ASSESSMENT METHODS

<table>
<thead>
<tr>
<th>Edi</th>
<th>SBC</th>
<th>Ork</th>
<th>Dub</th>
<th>Malay</th>
<th>IDL</th>
<th>COLL</th>
<th>ALP</th>
<th>OTH</th>
<th>Method</th>
<th>Weight</th>
<th>Exam Mins</th>
<th>Type</th>
<th>Diet</th>
<th>Synoptic Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>70</td>
<td></td>
<td>Assessment</td>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Coursework</td>
<td>30</td>
<td></td>
<td>Assessment</td>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>100</td>
<td>120</td>
<td>Reassessment</td>
<td>Semester 3</td>
<td></td>
</tr>
</tbody>
</table>