F79MB Statistical Models B

COURSE DETAILS
Course Code: F79MB
Full Course Title: Statistical Models B
SCQF Level: 9
SCAF Credits: 15
Available as Elective: No

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

COURSE AIMS
In this module students will

• develop the ability to understand and solve practical statistical problems
• learn how to choose appropriate statistical techniques in order to analyse data
• develop report writing and presentation skills
• develop independent research skills

LEARNING OUTCOMES – SUBJECT MASTERY
After studying this module, students should be able to:

• Construct statistical models appropriate to practical problems
• Understand, select and use appropriate graphical and summary techniques for exploratory data analysis
• Understand in detail the issues involved in the modelling of continuous response variables with one or more explanatory variables
• Be able to choose, fit and assess appropriate models for discrete or continuous responses
• Be able to write clear, concise and well-structured reports involving the application of the above skills to practical data-analytic problems.

LEARNING OUTCOMES – PERSONAL ABILITIES
At the end of the module, students should be able to:
• Demonstrate the ability to learn independently
• Manage time, work to deadlines and prioritise workloads
• Summarise and explain in writing the application of statistical modelling to practical problems (including the modelling of survival data) and understand the usefulness of statistical modelling in industry (and particularly in the actuarial profession)
• Present investigation results in writing and orally in a way which demonstrates that they have understood the technical and broader issues related to the application of statistical modelling methods
• Use statistical techniques and appropriate computing techniques to solve practical problems and to present the solution of these problems appropriately to both technical and non-technical audiences

SYLLABUS

• Linear models
• Generalised Linear Models
• Poisson process and associated distributions
  • Inference for the Poisson distribution
  • Dispersion and LR statistics and tests for Poisson data

• Single classifications
  • Binary classifications
  • Qualitative categories
  • Ordered categories
  • Goodness-of-fit tests for frequency distributions
  • Residuals

• Applied statistical project

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>F78PA</td>
<td>8</td>
<td>Probability and Statistics A</td>
<td>School of Math and Comp Sci.</td>
<td>Pre-Requisite</td>
</tr>
<tr>
<td>F78PB</td>
<td>8</td>
<td>Probability and Statistics B</td>
<td>School of Math and Comp Sci.</td>
<td>Pre-Requisite</td>
</tr>
<tr>
<td>F79MA</td>
<td>9</td>
<td>Statistical Models A</td>
<td>School of Math and Comp Sci.</td>
<td>Taught</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>Syncopic 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>Coursework</td>
<td>100</td>
<td>Assessment</td>
<td>Semester 2</td>
<td>F79MA</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coursework</td>
<td>100</td>
<td>Reassessment</td>
<td>Semester 3</td>
<td>F79MA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>------------</td>
<td>-----</td>
<td>--------------</td>
<td>------------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F79MB Statistical Models B