F78AA Actuarial and Financial Mathematics A

COURSE DETAILS
Course Code: F78AA
Full Course Title: Actuarial and Financial Mathematics A
SCQF Level: 8
SCAF Credits: 15
Available as Elective: No

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

COURSE AIMS
To introduce the student to simple mathematical models of cashflows accumulated or discounted at interest, and to develop skill in applying these models to real financial contracts and transactions.

LEARNING OUTCOMES – SUBJECT MASTERY
On completion of this course the student should be able to:

- Describe the basic concepts of simple and compound interest.
- Calculate the present value or accumulation of any set of discrete-time cashflows, at constant or varying rates of interest
- Derive and use simple formulae for values of level and increasing annuities-certain
- Explain the concept of the yield on a series of cashflows, and its limitations
- Calculate time-weighted, money-weighted and internal linked rates of return
- Analyse loan schedules, including simple alterations
- Describe basic fixed-interest securities, and calculate prices and yields allowing for tax
- Understand the discounted cash flow model and know what are internal rates of return (IRR), net present values (NPV) and break-even durations.
- Use an appropriate computer package to apply the methods introduced in this course.

LEARNING OUTCOMES – PERSONAL ABILITIES

- Interpreting problems from commercial practice in terms of relevant mathematical models
- Independently recognizing and applying appropriate mathematical techniques to solve problems
- Interpreting solutions expressed mathematically in terms of the original problem
- Communicating the solutions to complex problems in the financial services sector

SYLLABUS

- Simple interest
- Compound interest and discount
- Time units and effective rates of interest
Actuarial and Financial Mathematics A

- Accumulations and present values of discrete-time cashflows
- Varying rates of interest
- Annuities
- Yields
- Measuring rates of return
- Loan schedules
- Fixed-interest securities
- Discounted Cash Flows

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>F78AB</td>
<td>8</td>
<td>Actuarial and Financial Mathematics 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>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>70</td>
<td>120</td>
<td>Assessment</td>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>Y</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>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>100</td>
<td></td>
<td>Reassessment</td>
<td>Semester 3</td>
<td></td>
</tr>
</tbody>
</table>