F1J1-MSD Bachelor of Science in Mathematical Statistical and Actuarial Sciences with Diploma in Industrial Training

PROGRAMME DETAILS
Programme Code: F1J1-MSD
Department: Mathematics
Main Award: BSCH - Bachelor of Science Honours
Full Award Title: Bachelor of Science in Mathematical Statistical and Actuarial Sciences with Diploma in Industrial Training
Level: Undergraduate

LOCATION OF STUDY
| Region                        | Edinburgh | Y | Scottish Borders | N | Orkney | N | Dubai | N | Malaysia | N | Approved Learning Partner | N | Independent Distance Learners | N | Collaborative Learning Partner | N | Other | N |

ASSOCIATED AWARDS
<table>
<thead>
<tr>
<th>Programme Code</th>
<th>Award</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1F1-ZZZ</td>
<td>BSCO</td>
<td>Bachelor of Science in Mathematical, Statistical and Actuarial Sciences</td>
</tr>
<tr>
<td>F1J1-MSD</td>
<td>BSCH</td>
<td>Bachelor of Science in Mathematical Statistical and Actuarial Sciences with Diploma in Industrial Training</td>
</tr>
</tbody>
</table>

ACCREDITATION
N/A

LEARNING OUTCOMES – SUBJECT MASTERY
Understanding, Knowledge and Cognitive Skills

On completion of the programme, students will be able to:

- demonstrate an understanding across a broad range of mathematics statistics and actuarial science

- demonstrate a detailed knowledge and understanding in certain specific areas of these subjects

- demonstrate an understanding of the power of abstraction and of the notions of proof and logical reasoning

- demonstrate an appreciation of the usefulness of mathematics over a wide range of applications in particular in statistical and actuarial sciences

- relate theory to practice and practical application.

- show a limited knowledge and understanding of some major current issues in the industry in which the student is working during their work placement.
- show knowledge and understanding of the business environment of the industry in which the student is working during their work placement.

- undertake critical analysis, evaluation and/or synthesis of ideas, concepts, information and issues

- use a range of approaches to formulate evidence-based solutions/responses to defined and/or routine problems/issues.

- critically evaluate evidence-based solutions/responses to defined and/or routine problems/issues

### Scholarship, Enquiry and Research (Research Informed Learning)

On completion of the programme, students will be able to:

- demonstrate a good level of skill in calculation and in mathematical manipulation

- demonstrate the ability to present rigorous arguments

- model real-life situations especially in investments and insurance using mathematics and statistics and analyse the resulting models

- demonstrate computational skills involving the use of a range of software packages

### Learning Outcomes – Personal Abilities

#### Industrial, Commercial and Professional Practice

On completion of the programme, students will:

- be able to use a range of routine skills, techniques, practices and/or materials, a few of which are advanced or complex
-be able to carry out routine lines of enquiry, development or investigation into professional-level problems and issues.

-have a sound knowledge and awareness of the nature of the professional industrial environment and its demands upon them.

-be able to critically review existing practices and will be in a strong position to move on to a professional environment, with sound knowledge, confidence and awareness of the nature of that environment and the demands it will make.

-be able to understand the commercial aspect of the company in which the student is working

**Autonomy, Accountability and Working With Others**

On completion of the programme, students will be able to:

-plan and organise their own learning through self management and time management

-demonstrate the ability to work with relatively little guidance or support, to undertake self-directed work and to meet deadlines

-demonstrate appropriate transferable skills required of a graduate in an educational, social or employment context

-communicate effectively at all levels and using a range of media

-interact effectively with professionals from a wide and diverse range of areas

-exercise autonomy and initiative in some activities at a professional-level

-manage resources within defined areas of work
F1J1-MSD Bachelor of Science in Mathematical Statistical and Actuarial Sciences with Diploma in Industrial Training

- take the lead on planning in familiar or defined contexts
- take continuing account of own and others’ roles, responsibilities and contributions in carrying out and evaluating tasks
- work in support of current professional practice, under guidance

Communication, Numeracy & Information and Communications Technology

On completion of the programme, students will be able to:

- make presentations on specialised topics
- apply detailed mathematical knowledge
- display extensive IT knowledge and skills and will be able to use them confidently
- communicate on technical and general matters with peers and senior colleagues
- convey complex information to a range of audiences and for a range of purposes
- use a variety of forms of ICT effectively in the workplace

APPROACHES TO TEACHING AND LEARNING

The following teaching methods are used: lectures, tutorials, computing laboratory work, coursework, projects. Teaching on the programme is student-focussed, with students encouraged to take responsibility for their own learning and development. In addition, students learn through structured group work in problems solving, collaborative student presentations, and independent study and technical project work. Resource-based and problem-based teaching styles are used to facilitate the motivational and assimilative phases of the learning process. The level and type of support available via VISION will vary between the courses as is appropriate for the subject matter. Approaches to learning and teaching are continually reviewed and developed with the aim of matching them to the abilities and experiences of the students.
EDUCATIONAL AIMS OF THE PROGRAMME

To produce graduates with a good knowledge of mathematical, statistical and actuarial sciences who also possess other
generic skills so that they can pursue either further study in
these subjects or successfully enter employment in commerce, education or industry and to provide students with training
and practical experience of modelling, analysing and interpreting
mathematical and real-world problems in particular from statistical and actuarial sciences.
The programme will also:

- enable students to communicate and work effectively with peers and academic staff, demonstrating appropriate
levels of autonomy, initiative, and responsibility.

- provide students at the undergraduate level with the opportunity to plan and write a dissertation requiring detailed
and critical understanding

- encourage students to apply learning gained through their academic studies at the University to the workplace.

- enable students to gain work experience which will increase their employability and professional career readiness.

ASSESSMENT POLICIES

The assessment policy for the programme incorporates a range of assessment types. Continuous assessment during
some courses and summative assessment at the conclusion of courses both contribute to the overall assessment and are
used to formally measure achievement in specified learning outcomes. Understanding, knowledge and subject-specific
skills are assessed by coursework assignments and written examinations. Formative assessment is used to provide
feedback and to inform student learning.

Approaches to assessment are continually reviewed. Further details about methods of assessment are provided in the
appropriate course descriptors.

PROGRAMME STRUCTURE

Mandatory Courses

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HWUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Semester</th>
<th>Cours e Code</th>
<th>CourseTitle</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
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<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F17CA</td>
<td>Calculus A</td>
<td>15</td>
<td>7</td>
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<tr>
<td>X</td>
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<td></td>
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<td></td>
<td></td>
<td>F17CC</td>
<td>Introduction to University Mathematics</td>
<td>15</td>
<td>7</td>
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</table>
### F1J1-MSD Bachelor of Science in Mathematical Statistical and Actuarial Sciences with Diploma in Industrial Training

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
<th>Stage</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>F77SA</td>
<td>Introduction to Statistical Science A</td>
<td>15</td>
<td>7</td>
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<td>1</td>
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<tr>
<td>F17CB</td>
<td>Calculus B</td>
<td>15</td>
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<td>F77SB</td>
<td>Introduction to Statistical Science B</td>
<td>15</td>
<td>7</td>
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<tr>
<td>F18CD</td>
<td>Multivariable Calculus and Real Analysis A</td>
<td>15</td>
<td>8</td>
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<tr>
<td>F18CF</td>
<td>Linear Algebra</td>
<td>15</td>
<td>8</td>
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<tr>
<td>F78AA</td>
<td>Actuarial and Financial Mathematics A</td>
<td>15</td>
<td>8</td>
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<tr>
<td>F78PA</td>
<td>Probability and Statistics A</td>
<td>15</td>
<td>8</td>
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<tr>
<td>F18CE</td>
<td>Multivariable Calculus and Real Analysis B</td>
<td>15</td>
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<td>F78AB</td>
<td>Actuarial and Financial Mathematics B</td>
<td>15</td>
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<td>F78PB</td>
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<td>15</td>
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<tr>
<td>F19PL</td>
<td>Abstract Algebra</td>
<td>15</td>
<td>9</td>
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<tr>
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<td>Statistical Models A</td>
<td>15</td>
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<td>F19MO</td>
<td>Ordinary Differential Equations</td>
<td>15</td>
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<td>F79MB</td>
<td>Statistical Models B</td>
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<td>F18ZA</td>
<td>Industrial Training Placement A</td>
<td>60</td>
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<td>F18ZB</td>
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### Optional Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
<th>Stage</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>C27IE</td>
<td>Introductory Economics</td>
<td>15</td>
<td>7</td>
<td>1</td>
<td>1</td>
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<tr>
<td>C37FF</td>
<td>Finance and Financial reporting</td>
<td>15</td>
<td>7</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>F17GA</td>
<td>Problem Solving</td>
<td>15</td>
<td>7</td>
<td>1</td>
<td>2</td>
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<tr>
<td>F77PD</td>
<td>Professional Development Planning</td>
<td>15</td>
<td>7</td>
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<td>2</td>
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<tr>
<td>C37FF</td>
<td>Finance and Financial reporting</td>
<td>15</td>
<td>7</td>
<td>2</td>
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<tr>
<td>F19NA</td>
<td>Numerical Analysis A</td>
<td>15</td>
<td>8</td>
<td>2</td>
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<tr>
<td>C27IE</td>
<td>Introductory Economics</td>
<td>15</td>
<td>7</td>
<td>3</td>
<td>1</td>
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<tr>
<td>F19MV</td>
<td>Vector Analysis</td>
<td>15</td>
<td>7</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>F19PB</td>
<td>Pure Mathematics B</td>
<td>15</td>
<td>9</td>
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<td>1</td>
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<tr>
<td>F70LA</td>
<td>Life Insurance mathematics A</td>
<td>15</td>
<td>10</td>
<td>3</td>
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<tr>
<td>F79PA</td>
<td>Portfolio Theory and Asset Models</td>
<td>15</td>
<td>9</td>
<td>3</td>
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<tr>
<td>F79SP</td>
<td>Stochastic Processes</td>
<td>15</td>
<td>9</td>
<td>3</td>
<td>1</td>
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<td>C37FF</td>
<td>Finance and Financial reporting</td>
<td>15</td>
<td>7</td>
<td>3</td>
<td>2</td>
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<tr>
<td>F19AB</td>
<td>Applied Mathematics B</td>
<td>15</td>
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<td>F19MC</td>
<td>Complex Analysis</td>
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<td>F19NB</td>
<td>Numerical Analysis B</td>
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<tr>
<td>F70LB</td>
<td>Life Insurance Mathematics B</td>
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<td>10</td>
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<tr>
<td>F79DF</td>
<td>Derivative Markets and Discrete Time Finance</td>
<td>15</td>
<td>9</td>
<td>3</td>
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</tr>
</tbody>
</table>
### Electives (UG)

**Stage 1**

Any SCQF Level 7 course approved by the MSAS Course Director

**Stage 2**

N/A

**Stage 3**

N/A

**Stage 4**

N/A

**Stage 5**

N/A

### Composition and Stage Notes (UG)

**Stage 1**

8 courses (5 mandatory & 3 optional or elective)

Students must study 5 mandatory courses, together with up to 3 optional courses and up to 2 approved elective courses, with a maximum of one elective per term. In addition to the mandatory courses all students must study either Problem Solving or Professional Development Planning (but not both). The choice of electives will be published in the student handbook.

<table>
<thead>
<tr>
<th>Mandatory Credits</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Credits</td>
<td>45</td>
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<tr>
<td>Elective Credits</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
</tr>
</tbody>
</table>
### Stage 2

8 courses (7 mandatory & 1 optional)

Students may only choose C37FF if they have not chosen it in year 1

<table>
<thead>
<tr>
<th>Mandatory Credits 2</th>
<th>105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Credits 2</td>
<td>15</td>
</tr>
<tr>
<td>Elective Credits 2</td>
<td></td>
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<tr>
<td><strong>Total 2</strong></td>
<td>120</td>
</tr>
</tbody>
</table>

### Stage 3

8 courses (4 mandatory & 4 optional)

Students may only choose C271E if they have not chosen it in year 1.

Students can choose at most one of F19PB and F79PA.

Students can choose at most one of F19NB and F70LB.

Students can choose at most one of F19AB and F79DF

or Finance and Financial Reporting (C37FF).

C37FF may only be taken in stage 3 by direct entrants to stage 3.

<table>
<thead>
<tr>
<th>Mandatory Credits 3</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Credits 3</td>
<td>60</td>
</tr>
<tr>
<td>Elective Credits 3</td>
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<td><strong>Total 3</strong></td>
<td>120</td>
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</tbody>
</table>

### Stage 4

2 courses (2 mandatory 60-credit courses) for the Diploma in Industrial Training

<table>
<thead>
<tr>
<th>Mandatory Credits 4</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Credits 4</td>
<td></td>
</tr>
<tr>
<td>Elective Credits 4</td>
<td></td>
</tr>
<tr>
<td><strong>Total 4</strong></td>
<td>120</td>
</tr>
</tbody>
</table>

### Stage 5

8 courses (8 optional)

Students can choose at most one of F10NC, F70PE and F70LA.
Students can chose at most one of F10PC and F79PS.

Students can chose at most one of F10AC, F70CF and F70SC.

Students can chose at most one of F10PG and F70RT.

Students can chose at most one of F10ND, F70LP and F70LB.

Students can chose at most one of F10PD, F79BI and F70SP.

F71AB may only be taken in stage 5 by direct entrants to year 3

<table>
<thead>
<tr>
<th>Mandatory Credits</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional Credits</td>
<td>120</td>
</tr>
<tr>
<td>Elective Credits</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
</tr>
</tbody>
</table>

**ASSESSMENT AND PROGRESSION (UG)**

**Reassessment Opportunities**

1. A student who has been awarded a Grade E or a Grade F in a course may be re-assessed in that course.
2. A student shall be permitted only one re-assessment opportunity to be taken at the Resit diet of examination following the first assessment of the course.
3. A student shall not be re-assessed in any qualifying course taken in the final stage of a course of study.
4. The Progression Board may permit a student to be re-assessed in any qualifying course not taken in the final stage in order to gain credits for the course, provided that the mark or grade obtained in the first assessment of any such course is used in determining the classification of the degree to be awarded.

**Progression Requirements**

Part A. The minimum number of credits required to progress through each stage are as follows.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Minimum Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2</td>
<td>120 SCQF credits with a minimum of Grade D in all courses. The Board of Examiners has discretion to allow progression at each stage with 1 or 2 Grade Es in non-continuing subjects.</td>
</tr>
<tr>
<td>2 to 3</td>
<td>240 SCQF credits with a minimum of Grade D in all courses. The Board of Examiners has discretion to allow progression at each stage with 1 or 2 Grade Es in non-continuing subjects.</td>
</tr>
<tr>
<td>3 to 4</td>
<td>360 SCQF credits with an average mark on all courses that are rated SCQF level 9 or 10 of at least 60%</td>
</tr>
<tr>
<td>4 to 5</td>
<td>See Additional Programme Information</td>
</tr>
</tbody>
</table>

Part B. The minimum grade of D is required in the following courses.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All courses. The Board of Examiners has discretion to allow progression at each stage with 1 or 2 Grade Es in non-continuing subjects.</td>
</tr>
</tbody>
</table>
Stage 2

All courses.
The Board of Examiners has discretion to allow progression at each stage with 1 or 2 Grade Es in non-continuing subjects.

Stage 3

An average mark on all courses that are rated SCQF level 9 or 10 of at least 60%

Stage 4

Students who have progressed to Stage 4 have automatic progression to Stage 5 (as per Regulation 14.5):

"If the Award Board has recommended that the [Diploma in Industrial Training] should not be awarded to a candidate, this recommendation shall not be taken into consideration in making a decision regarding the candidate's progression to the next stage of the first degree on which the candidate is registered.

AWARDS, CREDITS AND LEVEL (UG)

Part A. Credit Requirements

<table>
<thead>
<tr>
<th>Overall Credits</th>
<th>Specific Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Masters</td>
<td>600 SCQF credits including a minimum of 120 credit at Level 11</td>
</tr>
<tr>
<td>Honours Degree (inc.MA)</td>
<td>480 SCQF credits including a minimum of 180 credit at Level 9 and 10 of which at least 90 credits at Level 10</td>
</tr>
<tr>
<td>Ordinary or General Degree</td>
<td>360 SCQF credits including a minimum of 60 credit at Level 9</td>
</tr>
<tr>
<td>Diploma of Higher Education</td>
<td>240 SCQF credits including a minimum of 90 credit at Level 8</td>
</tr>
<tr>
<td>Certificate of Higher Education</td>
<td>120 SCQF credits including a minimum of 90 credit at Level 7</td>
</tr>
</tbody>
</table>

Part B. Mark/Grade Requirements

<table>
<thead>
<tr>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Masters</td>
<td>&gt;=50%</td>
<td>C</td>
</tr>
<tr>
<td>Honours Degree (inc.MA)</td>
<td>&gt;=40%</td>
<td>D</td>
</tr>
<tr>
<td>Ordinary or General Degree</td>
<td>&gt;=40%</td>
<td>D</td>
</tr>
<tr>
<td>Diploma of Higher Education</td>
<td>&gt;=40%</td>
<td>D</td>
</tr>
<tr>
<td>Certificate of Higher Education</td>
<td>&gt;=40%</td>
<td>D</td>
</tr>
</tbody>
</table>

DURATION OF STUDY

<table>
<thead>
<tr>
<th>IN MONTHS</th>
<th>Full-time</th>
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<tbody>
<tr>
<td>Integrated Masters</td>
<td>60</td>
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<tr>
<td>Honours Degree</td>
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<tr>
<td>Diploma of Higher Education</td>
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<tr>
<td>Certificate of Higher Education</td>
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<tr>
<td>Ordinary or General Degree</td>
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