MODULE SPECIFICATION

KEY FACTS

<table>
<thead>
<tr>
<th>Module name</th>
<th>Advanced Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module code</td>
<td>HRM003</td>
</tr>
<tr>
<td>School</td>
<td>School of Health Sciences</td>
</tr>
<tr>
<td>Department or equivalent</td>
<td>Division of Health Services Research and Management</td>
</tr>
<tr>
<td>UK credits</td>
<td>15</td>
</tr>
<tr>
<td>ECTS</td>
<td>7.5</td>
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<tr>
<td>Level</td>
<td>7</td>
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MODULE SUMMARY

Module outline and aims
Health Service and clinical researchers are increasingly using complex study designs and measuring a multiplicity of variables within projects. These often require and have the potential to utilise a range of advanced data analysis methods.

In this module we will introduce a number of advanced and multivariate data analysis methods and lead you through their background, rationale, practical application and interpretation, using step by step explanations. Knowledge of these will help you understand, evaluate and draw informed conclusions from the complex analyses of other researchers, address how you will utilise the data in projects you design and to encourage you to analyse existing datasets in alternative ways.

Upon successful completion of the module, students should be able to use a suite of methods, as well as specialised software for analysis of common multivariate data scenarios.

Indicative Content outline

- Rationale, practical application and interpretation of quantitative data
- How to find the relationship between variables (Multiple Regression)
- Dealing with missing data
- Survival Analysis in applied health research
- Repeated Measures Analysis of Variance
- Principal Components Analysis
- Clustering and explorative data mining
- The rationale and calculation of sample size
- Analysis of data for participants organized at more than one level
- Testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions

Prerequisite and co-requisite modules

Students are required to have completed the HRM001 Introduction to Research Methods and Data Analyses Module prior to taking this module, and are expected to undertake
the HRM002 Advanced Research Methods in parallel to this course.

**WHAT WILL I BE EXPECTED TO ACHIEVE?**

On successful completion of this module, you will be expected to be able to:

**Knowledge and understanding**

- Use a range of advanced data analysis methods
- Demonstrate competency in comparing and contrasting the strengths and limitations of analytic methods
- Demonstrate critical ability in selecting appropriate methods to analyse specific datasets

**Skills**

- Critically select appropriate methodologies for complex study designs
- Demonstrate proficiency in a range of multivariate data analytic methods appropriate to complex study designs
- Demonstrate ability to extract and critically interpret appropriate information from a data analysis output
- Exercise critical reasoning in choosing appropriate tools and successfully complete a detailed research results report

**Values and attitudes**

- Demonstrate awareness of ethical issues related to research
- Show respect for research participants and colleagues

**HOW WILL I LEARN?**

Teaching and learning is undertaken via a mix of lectures, class discussions, seminars, student presentations, poster presentations, case study analysis, interactive computer based exercises, a virtual learning environment and self-directed learning.

**Teaching pattern:**

<table>
<thead>
<tr>
<th>Teaching component</th>
<th>Teaching type</th>
<th>Contact hours (scheduled)</th>
<th>Self-directed study hours (independent)</th>
<th>Placement hours</th>
<th>Total student learning hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Data Analyses</td>
<td>Lecture</td>
<td>15</td>
<td>60</td>
<td>0</td>
<td>75</td>
</tr>
<tr>
<td>Advanced Data Analyses</td>
<td>Workshop</td>
<td>15</td>
<td>60</td>
<td>0</td>
<td>75</td>
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</table>

**Totals:** 30 120 0 150
WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Assessments

To demonstrate your understanding of the analytic process, you will be required to:
1) Complete a data analysis workbook throughout sessions of the course and
2) Undertake an open-book exam and complete a lab report on a provided scenario and dataset.

Assessment pattern:

<table>
<thead>
<tr>
<th>Assessment component</th>
<th>Assessment type</th>
<th>Weighting</th>
<th>Minimum qualifying mark</th>
<th>Pass/Fail?</th>
</tr>
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<tbody>
<tr>
<td>Data Analysis workbook</td>
<td>Written reports</td>
<td>60%</td>
<td>50%</td>
<td>No</td>
</tr>
<tr>
<td>Practical Exam and associated Lab</td>
<td>Open book-exam</td>
<td>40%</td>
<td>50%</td>
<td>No</td>
</tr>
<tr>
<td>Report</td>
<td></td>
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Assessment criteria
Assessment Criteria and Grade-Related Criteria for module assessments will be made available prior to an assessment taking place. More information will be available from the module leader.

Feedback on assessment
Following an assessment marks and feedback will be provided in line with the Assessment Regulations and Policy. More information on the timing and type of feedback that will be provided for each assessment will be available from the module leader.

Assessment regulations
The Pass mark for the module is 50%. Any minimum qualifying marks for specific assessments are listed in the table above. The weighting of the different components can also be found above. The Programme Specification contains information on what happens if you fail an assessment component or the module.

INDICATIVE READING LIST


Appendix:

<table>
<thead>
<tr>
<th>HESA Code</th>
<th>Description</th>
<th>Price Group</th>
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<tbody>
<tr>
<td>103</td>
<td>Nursing and allied health professions</td>
<td>C2</td>
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<table>
<thead>
<tr>
<th>JACS Code</th>
<th>Description</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G311</td>
<td>Medical statistics</td>
<td>100</td>
</tr>
</tbody>
</table>