University College Dublin
School of Nursing, Midwifery and Health Systems
UCD Health Sciences Summer School

NMHSXXXX: Introduction to Statistics (5 ECTS)

Module Co-ordinator: Dr. Deirdre O’ Donnell

Module description
Statistics is an essential tool for health care research and health care professionals need to know and understand the basic principles and the language of statistics, in order to understand and interpret published research. Statistics enables researchers to summarise information in tabular and graphic form, describe populations in terms of their characteristics (or variables), test hypotheses, explore differences between groups and examine relationships and predict associations between variables. This module provides students with an introduction to basic statistical theory, including ideas of reliability and validity; levels and forms of measurement; statistical error; probability theory; statistical inference, effect sizes, probability-value and confidence intervals, and their application in empirical research. It also introduces some common descriptive and inferential statistical tests, including measures of central tendency and dispersion, t-test, ANOVA and Chi-square. Students will review and discuss examples of statistics in published research articles and will be provided with opportunities to conduct statistical tests using SPSS® software. Through lectures, practical workshops and self-directed learning, students should come to appreciate how statistics can inform our understanding of clinical interventions and their outcomes.

Learning Outcomes
On completion of this module the students should be able to:

- Define statistics and related terms, including hypothesis and null hypothesis, variable, measurement, reliability, validity, inference and probability
- Differentiate between descriptive and inferential statistics and between parametric and non-parametric statistics and identify the principal tests used in each
- Discuss levels of measurement and their application in measuring variables
- Write a research hypothesis, distinguishing the dependent and independent variables
- Compute descriptive statistics from a dataset, including frequency distribution, measures of central tendency and measures of dispersal, and display the results in tabular and graphic form
- Compute t-test and ANOVA and a correlation and discuss the results with reference to the research hypothesis
- Prepare a cross tabulation (contingency table), based on a data set and display the results in tabular and
- Discuss selective reporting and bias in reporting research

**Teaching methods**
The teaching component of the module will run over two weeks. In these two weeks students will receive instruction in large group lectures and will be provided with opportunities to conduct statistical analysis in the CAL setting. The indicative teaching and learning hours are set out below

<table>
<thead>
<tr>
<th>Method</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Lectures</td>
<td>16</td>
</tr>
<tr>
<td>Practical CAL</td>
<td>8</td>
</tr>
<tr>
<td>Autonomous learning</td>
<td>100</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>124</strong></td>
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**Assessment of learning**

<table>
<thead>
<tr>
<th>Method</th>
<th>Weighting</th>
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<tbody>
<tr>
<td>MCQ (c.40 items)</td>
<td>50%</td>
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<tr>
<td>Workbook (statistical reports)</td>
<td>50%</td>
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**Reading**
Class specific reading will be made available to all students before each class. The core text for the module is:


**Campus supports**
The Library is based in the Health Sciences. All students will have a library card which will gain them access to this facility. SPSS® is available on all campus computers or students can download the software to their personal computer from UCD Connect using their student log in details.