Introduction to Statistical Analysis in Psychology

Module title			
Introduction to Statistical Analysis in Psychology			
Module NFQ level (only if an NFQ level can be demonstrated)	**Module number / reference**	**ECTS Value**	**Duration**
8		**5**	**12 weeks**
Parent programme(s). Principal programme title, and embedded(s) if relevant		**Stage of parent programme**	**Semester No.**
BA (Honours) in Psychology		**1**	**2**

Teaching and Learning modes	**Proportion** (% of Total Directed Learning)
Classroom / Face to Face	**22.4%**
Workplace	
Online	
Other (Identify)	**77.6% (directed and self-directed learning)**

Entry requirements (statement of knowledge, skill and competence)	
The entry requirements, as set out in Section 4, must be satisfied for entry onto the programme.	
Maximum number of learners per instance of the module	**40**
Average (over the duration of the module) of the contact hours per week	**2.3**
Pre-requisite module title(s) (if any)	
Co-requisite module title(s) (if any)	
Is this a capstone module? (Yes or No)	**No**

Module-specific physical resources and support required per centre (or instance of the module)
SPSS and NVivo are required for this module in order to engage with statistical software. Learners will need to bring their own laptop for this module, in line with the requirements specified in Section 5.8 Lecture Hall, Library, IT Resources.

Specification of the qualifications (academic, pedagogical and professional/occupational) and experience required of staff working in this module.		
Role e.g. Tutor, Mentor etc.	**Qualifications & experience required:**	**# of Staff with this profile (WTEs)**
Lecturer/Tutor	Minimum level 9 qualification in Psychology with teaching and/or research competence in the area	100%

Analysis of required learning effort

						Hours of Learner effort				
Classroom and demonstrations		**Mentoring and small-group tutoring**		**Other (specify)**		**Directed e-learning**	**Independent learning**	**Other (specify)**	**Work-based learning**	**Total effort**
Hours	Minimum ratio teacher / learner	Hours	Minimum ratio teacher / learner	Hours	Minimum ratio teacher / learner					

24	1:10	4	1:10				97			125

Allocation of Marks					
	Continuous Assessment	**Supervised Project**	**Proctored Practical Exam.**	**Proctored Written Exam**	**Total**
Percentage Contribution	100%				**100%**

Rationale for Inclusion of the Module in the Programme and its Contribution to the Overall IPLOs	The rationale for the inclusion of *Introduction to Statistical Analysis in Psychology* is that statistical analysis is considered to be a core component of any psychology degree and a necessary aid in the execution of the final year dissertation. By providing such a module in the first year of the degree, we are ensuring that we are scaffolding learners' learning in relation to research methods and statistics and providing a firm foundation to engage in other modules within the programme. Furthermore, engagement in this module provides learners with a stepping stone to pursue a career in Psychology, Statistics and/or Research. This module also provides learners with the required credits necessary to attain graduate membership of the Psychological Society of Ireland, or the British Psychological Society. This module also presents learners with the opportunity to augment their applied skills as they are guided through the process of conducting research and engaging in statistical analysis. By engaging in this module, learners will be provided with some of the core knowledge which will augment and cement their understanding of the programme in subsequent modules. By introducing learners to this content it will provide them with a competitive edge within the field of psychology.
Module Aims and Objectives	The first dedicated core statistics module in this Psychology programme, this module aims to provide learners with an introduction to the fundamentals of statistical analysis within psychology and provides a basis for later statistical learning and applications across modules within the Psychology programme. The objectives are to provide learners with a foundation in statistical analyses, an understanding of how to describe data distributions, and compute descriptive statistics on numerical data; apply the statistical argument to the outcome of a quantitative investigation; understand the difference between parametric and non-parametric data; use the SPSS statistical package to explore and plot data and conduct simple statistical tests, and report the results of statistical tests in an appropriate manner.
Minimum Intended Module Learning Outcomes	On successful completion of this module, learners should be able to: 1. Differentiate and understand the difference between types of variables involved in psychological analyses. (MIPLO 1, 3, 7) 2. Demonstrate a critical understanding of the difference between parametric and non-parametric data. (MIPLO 1, 3, 4)

	3. Use SPSS to do basic quantitative analyses and NVivo to explore basic qualitative analyses. (MIPLO 3, 4) 4. Be able to evaluate and interpret the results of statistical tests. (MIPLO 1, 2, 4, 5)
Information Provided to Learners about the Module	College Prospectus specifies module name, stage and ECTS. College website and programme handbook to contain (in addition to above) short description of module content, module learning outcomes, prerequisite modules, and assessment mechanisms. Module Moodle page to contain (in addition to above) schedule of classes and topics, detailed assessment information with titles and submission dates, full bibliography and list of learning resources.
Module Content, Organisation and Structure	Over the course of 12 weeks, the learner will cover topics such as: **Variables: Their Role in Research and Statistical Analysis** • What are variables? • Consider variability and variables. • Become familiar with the methods of measuring variables. • Types of measurement value. • Distributions of values (e.g., normal distribution). • Interval Variables. • Ordinal Variables. • Categorical Variables. **Introduction to Statistics in Psychology.** • How to collect and describe data. • Exploratory data analysis methods and summary statistics • Understanding statistical significance and confidence intervals • Design and analysis of studies involving two or more experimental conditions. • Consider the uncertainty and variability involved in data collection. • Introduction to computer software packages used in psychological research, e.g. SPSS and NVIVO **Practical use of SPSS** • Entering data (variable view, data view) • Coding variables in SPSS • How to conduct and interpret basic descriptive statistical analyses • Introducing and interpreting inferential statistical analyses • Understanding Missing values in SPSS **Correlational Research:** • Why engage in correlational research. • Correlation does not equate causation! • Parametric versus Non-Parametric Tests. • Spearman's Rho Correlation. • Pearson's Rho Correlation. • How to interpret and present these results as per APA.

	Null Hypothesis Testing: • The logic of null hypothesis Testing. • Likelihood functions and null hypothesis testing. • The consequences of null hypothesis testing. • A Conversation about testing for null effects. **Practical use of NVIVO** • How to organize, analyse and find insights in unstructured qualitative data such as interviews, open-ended survey responses, articles, social media and web content. • How to code conversational transcripts • Thematic analysis • Content analysis • Constant comparison qualitative analyses **Relationships between Variables** • What is a relationship between variables? And why is this important in psychology and the social sciences? • Consider the logic of relationships. • Become familiar with the types of relationships between variables. • Determining the strength of a relationship by examining effect sizes. • What is the perspective on effect sizes offered by psychology? • Consider relationships, statistics and variability. **Ensuring a Strong Basis for Research** • Consider the roles of confounding and extraneous variables. • Defining independent and dependent variables. • How to control for factors which may impact outcome.
Module Teaching and Learning (including formative assessment) Strategy	This module will be delivered in a two-hour lecture format across twelve weeks and four one-hour tutorials delivered across eight weeks. The lectures will offer a pragmatic and practical approach to statistical analysis and will begin by outlining the rationale and theory behind the lecture content and will then further cement this understanding by engaging in psychology laboratory based tutorials to: • Calculate and analyse statistical significance in research, • Debate appropriate methods of analysis and design for research questions proposed, • Refine statistical and lab report writing and presentation, • Become familiar with SPSS & NVivo software and data entry. The rationale for this teaching methodology rests in the practical and applied dimension of the module and considers the importance of hands-on directed learning when engaging with software such as SPSS, NVivo and research methodologies. Furthermore, it considers the appropriate methods to introduce and solidify complex research components in an understandable and interactive way by scaffolding and supporting the learners' learning.

	Moodle will also be employed each week to upload relevant articles, PowerPoints of the lecture material, practice material, required reading and in some instances, videos of appropriate methodology within research or explanations of particular topics within the module. Moodle will also be used to encourage learner engagement and to provide learners with dummy data sets to familiarise themselves with SPSS, NVivo and data entry. Furthermore, Moodle will be used for short screen-recording videos (where necessary and appropriate) to provide learners with examples of how to engage in statistical analysis for specific research designs within the current module. Moodle will be monitored and contributed to weekly by the lecturer with appropriate learning materials in order to ensure continued engagement and learning.
Work-Based Learning and Practice-Placement	N/A
E-Learning	N/A
Specifications for Module Staffing Requirements	Staff: Learner ratio is typical of the overall program approach with a maximum of 40 learners. The maximum tutor: learner ratio is 1:20 Staffing Requirements: 1 lecturer with teaching and/or research competence in the relevant area.
Module Summative Assessment Strategy	This module will be assessed by two continuous assessment pieces, comprising: • Worksheet, worth 50%: Learners will be asked to complete a worksheet with a number of statistical questions on a subject (or combination of subjects) • Presentation, worth 50%: Learners will be asked to provide a 10-minute presentation based upon a specific research case study and pre-specified research question.
Sample Assessment Materials	(A) This module will ask the learner to complete a worksheet with a number of statistical short questions on a subject (or combination of subjects) such as: • Statistical significance calculations across a number of research designs. • Entering data into SPSS and NVIVO • Conducting and interpretating statistical analyses using SPSS and NVIVO • Limitations and strengths of specific research method designs. • Identify independent and dependent variables within supplied case studies and identify any potential confounding or extraneous variables. This assessment addresses MIMLOs 1-4.

	This will have a word limit of 1,000 – 1,250 words and should take a minimum of seven - eight hours of learner effort. The guidelines include: 1. Adhering to APA referencing and formatting (i.e., Times New Roman font size 12 with 1.5 line spacing). 2. Work must be proofread for spelling and grammatical errors. 3. Include a separate Cover Page and Reference Page. 4. Employing a discursive and critical approach to the topic. 5. Demonstrating evidence of work in the case of statistical calculations (i.e., mathematical calculations). 6. Using a balanced, objective approach to the question outlined. 7. Do not refer to "I" in this work, instead write in the third party. 8. All work should include reference to appropriate peer-reviewed texts or resources when making a specific point or argument. 9. As this is an introduction to lab reports and writing within research, learners must aim to be succinct but demonstrate the appropriate breadth and depth of reading (e.g., 3 – 5 appropriate texts). This work is worth 50% of the Continuous Assessment and is graded as follows: • Structure (Guidelines 1 – 3) is worth 20%. • Academic understanding and ability as per Guidelines 4 – 7 is worth 50%. • The remaining 30% is awarded for content comprehension and excellent flow to the work (as indicated by Guidelines 8 and 9). (B) This module will ask the learner to provide a 10-minute presentation based upon a specific case study and pre-specified research question (Learners will have a choice of case studies and research questions to choose from). Learners will be required to: (i) Provide a justification for the research design that they have suggested, (ii) Provide an example of an existing study which has used their proposed research design to address the research question outlined, and (iii) Consider the potential strengths and limitations of the research design proposed. This assessment addresses MIMLOs 1-4. This presentation will be equivalent to 1,000 – 1,250 words and should take at least seven - eight hours of learner effort. The guidelines involve: 1. Adhering to APA formatting within the presented work. 2. Work must be proof-read for spelling and grammatical errors. 3. Include a Title page for the presentation and a separate page of references. 4. Employing a discursive and critical approach to the topic. 5. Using a balanced, objective approach to the question outlined. 6. Do not refer to "I" in this work, instead write in the third party. 7. All work should include reference to appropriate peer-reviewed texts or resources when making a specific point or argument. 8. As this is a presentation, learners must ensure that their slides are not overly cluttered and are clearly legible, while still demonstrating an appropriate depth and breadth of reading.

	9. Communicate clearly and effectively. This work is worth 50% of the Continuous Assessment and is graded as follows: • Structure (Guidelines 1 – 3) is worth 20%. • Academic understanding and ability as per Guidelines 4 – 6 is worth 50%. • The remaining 30% is awarded for content comprehension and excellent flow to the work (as indicated by Guidelines 7 - 9).
Reading Lists and Other Information Resources	**Essential Reading:** Watt, R. and Collins, E. (2019). *Statistics for Psychology: A guide for beginners and everyone else*. London: Sage **Other Reading:** Case studies and articles as posted on Moodle by the Lecturer. Learners will also be provided with articles from relevant journals, such as: *Journal of Mixed Methods Research* *Qualitative Research* *Qualitative Inquiry* *Survey Research Methods* *Journal of Research Practice* *Research Synthesis Methods* *Statistical Methods in Medical Research* **Essential Viewing:** Screen Recordings of how to conduct statistical analyses within specific contexts.
Module Physical Resource Requirements	Lecture Hall with PowerPoint, Computer or Laptop with SPSS, NVivo, DVD and internet access.