MODULE **DESCRIPTOR**

MODULE TITLE	LINEAR MODELS		
MODULE CODE	MA2873 (L5)	**CREDIT VALUE**	20 CREDITS (10 ECTS)
CAMPUS	UCLAN CYPRUS		
SCHOOL	SCHOOL OF SCIENCE		

MODULE **AIMS**

This module aims to:

1. Introduce students to the theory of generalised linear models for modelling relationships between variables, with an emphasis on practical considerations.
2. Present to students the use of specific models and associated techniques.
3. Train students to use statistical software packages such as SPSS (or STATA).

MODULE **CONTENT**

Linear Models I

Simple Linear Regression Model: Estimation of the parameters, Confidence Intervals and Hypothesis testing for the parameters.

Multiple Linear Regression Model: Estimation of the parameters, Confidence Intervals and Hypothesis testing for the parameters

Model Adequacy: Residual analysis, Tests for linearity, homoscedasticity, independence, normality, lack-of-fit test, Model Selection Criteria.

Linear Models II

Analysis of Variance: Single and Multi-factor ANOVA with fixed effects, Single and Multi-factor ANOVA with random effects, Multiple Comparisons: Bonferroni's Method, Tukey's Method.

Analysis of Covariance

Generalised Linear Models: Logistic Regression, Probit Models, Poisson Regression.

Statistical Software Package (SPSS/STATA)

Describing Data, Computing Descriptive Statistics, Comparing Groups, Plotting Data, Testing Hypothesis, One-way ANOVA, Two-way ANOVA, Linear Regression and Correlation, Testing Regression Hypothesis, Analysing Residuals, Multiple Regression Models.

INTENDED **LEARNING OUTCOMES**

On successful completion of this module a student will be able to:	
1.	Apply basic concepts of the theory of generalised linear models.
2.	Summarise data by using the appropriate statistical model.
3.	Use models to describe the relationship between random variables.
4.	Check the validity of the model.
5.	Use statistical software packages to present and analyse data.

TEACHING **METHODS**

The class contact will consist of teaching classes together with workshops. Teaching classes will introduce new material and provide examples. Tutorials have no new material introduced. Students will attempt problems during the tutorials. Key elements of the learning strategy are regular sessions during which problems are attempted. Throughout the week students will be given a list of problems to attempt.

The module will be assessed principally by examination. However, to facilitate and monitor the formative learning process selected set exercises will be submitted for assessment. These will present regular opportunities for feedback and feedforward. At the end of the module, students will be expected to include a reflective component in this portfolio of work. This will make up the coursework component of the module.

ASSESSMENT **METHODS**

The module is assessed through a Portfolio of set exercises and a written examination.