

MODULE DESCRIPTOR

MODULE TITLE	Introduction to Mathematics and Statistics		
MODULE CODE	MA1601 (L4)	CREDIT VALUE	20 CREDITS / <u>10 ECTS</u>
SCHOOL	SCHOOL OF SCIENCES		

MODULE AIMS

The aims of the module are to:

1. Develop the student's ability to use common mathematics in non-maths based subjects.
2. Introduce the students to techniques and methods of data analysis
3. Introduce the students to terminology and methods of statistical analysis.
4. Develop the students' ability to interpret data.
5. Develop the student's critical and analytical skills.

MODULE CONTENT

Numbers: Roots, powers and indices. Logarithms. Percentages. Conversions.

Algebra: Manipulating algebraic expressions. Solving equations.

Data: Methods of representing data. Interpretation of data representation.

Combinatorics: Factorials (arranging n objects in $n!$ ways etc.), combinations, permutations.

Probability: What is a probability? Events and sample spaces, probabilities from Venn diagrams, probabilities from formulae (unions/intersections), mutually exclusive events, exhaustive events, conditional probability, independent events, probability trees, experimental probability.

Statistics: Mean, median, mode, finding these from frequency distributions and grouped frequency distributions, the interpretation and uses of the different measures. Range, percentiles/quartiles/interquartile range, standard deviation and variance, calculating these measures from frequency distributions and grouped frequency distributions, outliers, the interpretation and uses of the different measures.

INTENDED LEARNING OUTCOMES

1. Manipulate numbers and use them to find quantities such as percentages, tax amounts, simple and compound interest.
2. Use algebra to rearrange expressions and solve equations like quadratic equations and linear simultaneous equations.
3. Solve questions on probability.
4. Represent data, interpret data, and perform some statistical analysis.

TEACHING METHODS

The class contact will consist of teaching classes together with workshops. Teaching classes will introduce new material and provide examples. Workshops have no new material introduced. Students will attempt problems during the workshops. 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. Every two weeks there will be a short test on the recent material covered.

The module will be assessed by short tests and a final examination. To assess and grade how well the students understand all of the topics covered in the module, given the benefit of all the feedback from the short tests, a final examination is used.

ASSESSMENT METHODS

This module is assessed through an online homework (20%), an in-class assessment (20%) and an examination (60%).