SETU

Ollscoil
Teicneolaíochta
an Oirdheiscirt

South East
Technological
University

Module Descriptor

Further Statistics (Computing and Mathematics)

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Further Statistics
(A13004)

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Short Title: Further Statistics
Department: Computing and Mathematics
Credits: 5   **Level:**   Intermediate

Description of Module / Aims

The module is designed to consolidate understanding of fundamental statistical concepts and extend knowledge and skills to probability, advanced regression techniques and inferential statistics. The student will see how these tools can be applied in an industry setting. Statistical software will be used as a modelling tool.

Programmes

	stage/semester/status
STAT-0054 BSc (Hons) in Software Engineering (WD_KDEVP_BI)	3 / 6 / M
STAT-0054 BSc (Hons) in Software Systems Development (WD_KDEVP_B)	3 / 6 / M
COMP-0659 BSc in Information Technology (WD_KINFT_D)	3 / 6 / M
STAT-0054 BSc in Software Systems Development (WD_KCOMC_D)	3 / 6 / M

Indicative Content

- Probability: Basic probability and nature of statistical investigations; Discrete and continuous distributions; Quality control charts

- Inferential statistics: Sampling distributions; Hypothesis testing using p values and confidence intervals on one or more samples

- Advanced regression: Non-linear regression; Multiple regression; Goodness of fit testing

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Apply probability principles and data distributions to evaluate quality control procedures.
2. Distinguish between descriptive and inferential statistical quantities in data analytics.
3. Apply a broad range of analytical statistical techniques and interpret these appropriately.
4. Analyse patterns from intricate data sets.
5. Assemble data sets for subsequent analysis and conclude suitable inferences from them.
6. Use appropriate statistical software tools to analyse and interpret data.

Learning and Teaching Methods

- This module will be presented by a combination of lectures and computer-based practical labs.
- The practical labs will be used to support lectures by providing students with tools for modelling real world problems.
- The lectures will be used to introduce new topics and their related concepts.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	24	
Practical	24	
Independent Learning	87	

Assessment Methods

	Weighting	Outcomes Assessed
Final Written Examination	60%	1,2,3,4,5
Continuous Assessment	40%	
In-Class Assessment	15%	1,2,3
Practical	25%	1,2,3,4,5,6

Assessment Criteria

<40%: Unable to interpret and describe key statistical concepts.

40%–49%: Be able to interpret and describe key statistical concepts.

50%–59%: Be able to discuss key statistical concepts and to discover and integrate related knowledge in other knowledge domains.

60%–69%: Be able to solve statistical problems using appropriate statistical tools.

70%–100%: Be able to analyse and design solutions to a high standard for a range of both complex and unforeseen problems through the use and modification of statistical skills and tools.

Supplementary Material(s)

- "Further Statistics moodle page." https://moodle.wit.ie
- Crawley, M.J. *Statistics: An Introduction using R.* 2nd ed. New Jersey: Wiley, 2014.
- Rice, J.A. *Mathematical Statistics and Data Analysis.* 3rd ed. New York: Duxbury Press, 2010.

Requested Resources

- Room Type: Computer Lab