WM9K9-15 Problem Solving with Statistics

23/24

Department
WMG
Level
Taught Postgraduate Level
Module leader
Negar Riazifar
Credit value
15
Module duration
4 weeks
Assessment
Multiple
Study locations
University of Warwick main campus, Coventry Primary
Distance or Online Delivery

Description

Introductory description

Many businesses and the sub-systems or processes on which they depend are the focus of "Continuous Improvement". Once the obvious changes have been completed it becomes increasingly difficult to identify a path which can lead to better performance, whether this involves progressing from Good to Excellent, from Acceptable to Good, or from Unacceptable to Acceptable. There are many tools and techniques which can be used to aid this quest, including those that have a basis in statistics.

This module describes the general context in which statistical techniques are appropriate, and when they are not. It indicates the basis of statistics as a means of modelling the system under consideration, and describes some of the tools for investigating processes, either to solve specific problems or to gain insights to support future development and improvement.

Module aims

To gain experience and understanding of the following:
The development of Statistical models to represent "real life" systems.

The use of Statistical models in Problem Solving and Decision Making.
The relationship between Statistical methods and other Problem Solving techniques.
The extension of basic tools into more powerful techniques.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Statistical models and "real world" systems.
Statistical Distributions (Continuous and Discrete).
Exploratory Data Analysis.
Sampling and Inference
Regression and Correlation
Introduction to Decision Analysis
Non-parametric Statistics
Model Building.

Learning outcomes

By the end of the module, students should be able to:

- Critically evaluate the assumptions that govern a situation and apply the appropriate statistical models to represent "real life" systems.
- Advanced understanding and application of statistical tools and techniques in problem solving and decision making
- Critically interpret the results of quantitative data analysis and present them in a meaningful way that can support business improvement and decision making
- Demonstrate sophisticated practical skills in implementing statistical analyses in current applicable software packages
- Develop professional reports and visualisations to illustrate the outcomes of applied statistical analysis and provide practical recommendations on optimal actions

Indicative reading list

View reading list on Talis Aspire

Subject specific skills

Analysis, Modeling, use of software to support decision making.

Transferable skills

Communication, organization, teamwork,

Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	10 sessions of 1 hour (7%)
Online learning (scheduled sessions)	(0%)
Online learning (independent)	60 sessions of 1 hour (40%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

No private study requirements defined for this module.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time
Statistical analysis of case study data	20%	10 hours
group presentation of visualisation and analysis of case study data		
Statistical analysis and discussion	80%	50 hours
Discussion and analysis based on a given project		

Assessment group R1

	Weighting	Study time
Statistical analysis and discussion	100%	
Discussion and analysis of given problem and datasets		

Feedback on assessment

Written feedback.

Availability

Pre-requisites

There is currently no information about the courses for which this module is core or optional.