

# WM9K9-15 Problem Solving with Statistics

**22/23**

**Department**

WMG

**Level**

Taught Postgraduate Level

**Module leader**

Jane Marshall

**Credit value**

15

**Module duration**

2 weeks

**Assessment**

Multiple

**Study locations**

University of Warwick main campus, Coventry Primary

Distance or Online Delivery

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## 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,

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# 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)	20 sessions of 1 hour (13%)
Assessment	100 hours (67%)
Total	150 hours

## Private study description

No private study requirements defined for this module.

## Costs

No further costs have been identified for this module.

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## Assessment

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

### Assessment group A

	Weighting	Study time	Eligible for self-certification
Statistical analysis of case study data	20%	20 hours	No
Visualisation and analysis of case study data			
Statistical analysis and discussion	80%	80 hours	Yes (extension)
Discussion and analysis of given problem and datasets			

### Assessment group R

	Weighting	Study time	Eligible for self-certification
Statistical analysis and discussion	100%		Yes (extension)
Discussion and analysis of given problem and datasets			

## **Feedback on assessment**

Written feedback.

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## **Availability**

## **Pre-requisites**

## **Courses**

This module is Optional for:

- Year 1 of TWMS-H1S9 Postgraduate Taught Management for Business Excellence (Full-time)