

## Advanced Experimentation for Process Improvement (3 days)

This course follows from the Practical Experimentation course and will enable experimenters to add a range of advanced techniques to their DoE toolkit. The main topics are General Factorial Designs, Response Surface Methodology, Mixture Designs and Evolutionary Operations

### Course Content

- 2-Level factorial review
- 9 step DOE framework
- Modelling more complex relationships
- Experimental design families
- General Factorial designs
- Modelling surfaces
- Lack of fit statistics
- Advanced diagnostics - deleted statistics
- Minitab report pad to document analysis
- Black Box process simulation
- RSM Design overview
- Centre points and axial points
- Sequential RSM from  $2^k$  designs
- RSM design families
- Surface plots and contour plots
- Response optimizer with multiple responses
- RSM Black box simulator exercise
  
- EVOP as a process management system
- EVOP Designs for 2 and 3 factors
- EVOP black box process simulator
- Mixture design principles
- Mixture design families
- Mixture design exercise - drink mix
- Course summary

### About the Instructor

James A. Alloway, Jr. has been teaching DOE to university students as well as to hundreds of Lean Six Sigma delegates for 21 years. He has made numerous presentations on this topic at local meetings and international conferences for the American Statistical Association, the American Society for Quality, and the Institute of Industrial Engineers. His area of specialization is in developing unique methods to teach the fundamental concepts of DOE to those with little formal training in statistical methods.