

4061

Engineering Decision Making

1-Day Course

Instructor: Dr. William J. Rogers

Program Content:

This course will discuss and exercise decision-making examples using decision tree figures and other tools to analyze decision alternative outcomes and probabilities including the likelihood of observing particular outcomes in tests to lower uncertainty for more accurate decision-making.

Course topics include:

- Method and components of an engineering decision
- 'Flaw of averages' and the importance of working with variability of critical parameters
- Use of probability to model uncertain events and guide uncertainty reduction
- Expected likelihood and expected utility of alternative outcomes
- Value of information and method to determine how much additional information, if any, is needed prior to making an engineering decision, and the value of perfect information to find the value limit of additional information to make a given decision
- Bayes Model to update probability estimates using new information
- How to calibrate engineering decisions based on tolerable risk ranges.

Information gathering, analysis, and decision-making are vital components of engineering responsibility. This responsibility includes the value of information to decrease uncertainty for cost effective decrease of outcome risk. Such decisions employ information to estimate values and outcome probabilities of decision alternatives. Therefore, the pillars of engineering decision making are the values and probabilities of alternative outcomes. Exercises and case studies drawn from life and from engineering applications will illustrate the tools needed for professional decision making applications. Case studies include natural gas or oil drilling, building extension/rebuilding, toxic exposures, dikes to avoid flooding, replacement of leaking pipeline, and offshore platforms.

Who Should Attend?

All engineering personnel (design, operations, maintenance) who are involved in day-to-day operations and decision making in the plants. In addition, all project managers should attend this course.

Location:

Phoenix Contact Customer Technology Center; Houston, TX

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CEUs

7
PDHs