

# Data Sciences and Operations

## USC Marshall School of Business

### DSO 536

### Monte Carlo Simulation and Decision Models

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BRI 401H

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### *Who should take the course?*

Students who are interested in business analytics in general, and in techniques to account for risk in decision-making more specifically.

### *Course objectives*

To provide students with the knowledge to develop decision models in Excel that incorporate uncertainty, through the use of random number generation.

### *Key concepts*

- Risk analysis
- Decision making under uncertainty
- Statistics and data analysis
- Random number generation
- Quantitative spreadsheet skills.
- Together, we will build spreadsheet models for
  - Investment evaluation;
  - Option pricing;
  - Contract structuring;
  - Staffing decisions.

### *Course description*

Uncertainty is everywhere. Then, businesses must make decisions in the face of uncertainty every day. Hence it is important to understand methodology for dealing with uncertainty. Simulation is a way to account for randomness in decision-making, by furnishing the decision-maker with a range of possible outcomes, and their probabilities of occurrence for each possible course of action. This can then be used for optimization purposes.

In relation to DSO 547 (Designing Spreadsheet-Based Business Models), this course goes more in-depth on uncertainty modeling (and the material is coordinated to ensure minimum overlap without assuming knowledge from DSO 547). Knowledge of basic probability and statistics (at the level of DSO 516, Probability and Data Models) is assumed.

DSO 536

DIGITAL  
TRANSFORMATION

