Managing Uncertainties in Innovative Projects
with
Info-Gap

5 Day Course Schedule
Yakov Ben-Haim and Wendell Iverson

Overview of the 5 days

Day 0: Evening get-together. Drinks and snacks.

Day 1: Lectures and exercises:
• Task-duration uncertainty.
• Robustness against failure.

Day 2: Lectures and exercises:
• Cost-uncertainty, outcome-uncertainty.
• Hybrid info-gap-probabilistic analysis.
• Robustness against failure.
• Opportuneness to windfall.

Day 3:
• Working group formation.
• Problem definition.
• Workshop dinner in the evening.

Day 4:
• Progress of working groups.
• Preparation of working group reports.

Day 5:
• Presentations by working groups.
• Closing lunch.
Day 1

Introduction

08:30 – 08:45: Welcome and introduction of participants

08:45 – 09:15: (Iverson)
   • Why a course on info-gap applications for project management?
   • The role and place of info-gap in project management.

Project Time

09:15 – 10:30: (Ben-Haim)
   • Project scheduling with task-duration uncertainty.
   • Resource allocation, no uncertainty weights.

10:30 – 11:00: Coffee break

11:00 – 12:30: Exercise session.
   • First half: students work with help from us.
     Average: Project management with time incentive.
     Basic: Project management.
     Challenge: Project management with allocation and budget decisions.
   • Second half: Review of exercises.


13:30 – 14:15: (Iverson)
   • How to get to work: The long, short road or the short, long road?
   • (Skewed uncertainties of duration).

14:15 – 15:00: (Ben-Haim)
   • Project scheduling with task-duration uncertainty. Uncertainty weights.
   • Uncertainty-critical paths. Crossing robustness curves.

15:00 – 15:30: Coffee break.

15:30 – 17:00: Exercise session.
   • First half: students work with help from us.
     Transportation network.
   • Second half: Review of exercises.

17:00 – 17:30: (Ben-Haim): Additional applications of info-gap analysis of duration uncertainty:
   One of the following:
   • Opportuneness.
   • Real-time evaluation of robustness.
   • Enhancing robustness by reducing uncertainty.
   • Enhancing robustness by restructuring the flow chart.
Day 2

**Project Costs**

08:30 – 08:45: Review of previous day (Iverson)

08:45 – 10:30: (Ben-Haim)
  - Info-gap analysis of uncertain costs.
  - Uncertain expected utility.

10:30 – 11:00: Coffee break.

**Project Performance Requirements**

11:00 – 12:30: Exercise session.
  - First half: In-house or out-source?.
  - Review of exercises.


13:45 – 15:00: (Ben-Haim). Info-gap analysis of value at risk.

15:00 – 15:30: Coffee break.

15:30 – 17:00: Exercise session.
  - First half:
    - **Average**: Project profitability.
    - **Basic**: Uncertain probabilistic profit.
    - **Challenge**: Failure probability and financial loss.
  - Review of exercises.
Day 3

08:30 – 08:45: Guidelines for working groups: 15 minutes (Iverson).
08:45 – 10:00: Brainstorming on decision problems. Break into working groups.

10:00 – 10:30: Coffee break.

10:30 – 12:30: Milestones:
- Verbally formulate decision.
- Verbally formulate uncertainty models, system models, and performance requirements.


13:30 – 15:30: Milestones:
- Mathematically formulate uncertainty models, system models, performance requirements.
- Initiate calculations of robustness functions.

15:30 – 16:00: Coffee.

16:00 – 17:00: 10-minute presentation by each group.

19:00: Workshop dinner.

Day 4

08:30 – 10:30: Milestones: Robustness curves calculated.

10:30 – 11:00: Coffee break.

11:00 – 12:30: Milestones: Project report initiated.

12:30 – 13:30: Lunch

13:30 – 15:00: Milestones: Decision implications studied.

15:00 – 15:30: Coffee break.

15:30 – 17:00: Milestone: Project report drafted.

Day 5

08:30 – 10:30:
- Finish project report.
- Prepare presentation.

10:30 – 11:00: Coffee break

11:00 – 13:00: Presentations.

13:00 – 14:00: Lunch.

14:00: Departure.