

**Managing Uncertainties in Innovative Projects
with
Info-Gap**

5 Day Course Schedule

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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.

12:30 – 13:30: Lunch.

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.

12:30 – 13:30: Lunch.

13:30 – 13:45: (Iverson). Catastrophic events under severe uncertainty: Industrial case studies.

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.

12:30 – 13:30: Lunch.

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.