

Day 1

1. Introduction (2.00 hours)

- Introducing the course & your instructor (30 mins)
- What is Cognitive Systems Engineering? (60 mins)
- Course Overview (30 mins)

2. Information Management Exercise (1.00 hours)

- Team Cognition (group exercise & debrief, 60 mins)

3. Cognitive Task Analysis Part 1 (2.5 hours)

- Naturalistic Decision Making (60 mins)
- Critical Decision Method (45 mins)
- Cognitive Work (45 mins)

4. Cognitive Task Analysis Part 2 (1.5 hours)

- Applied Cognitive Task Analysis (45 mins)
- Decision Centered Design (45 mins)

Video: Cognitive Systems Engineering for Systems Engineering (0.5 hours)

Day 2

5. Cognitive Task Analysis Part 3 (1.0 hours)

- Cognitive Indicators (60 mins)

6. Cognitive Task Analysis Part 4 (2.0 hours)

- Team Cognition (45 mins)
- Critical Decision Method for teams (15 mins)
- Decision Centered Design for Teams (45 mins)
- Cognitive Task Analysis; Summary Review (15 mins)

7. Entry to Systems Analysis (1.0 hours)

- System Boundary Analysis (60 mins)

8. Cognitive Work Analysis, Part 1 (3.0 hours)

- What is Cognitive Work Analysis? (20 mins)
- The Movie; What is Cognitive Work Analysis? (10 mins)
- Work Domain Analysis (60 mins)
- Work Domain Analysis for Forest Fires (instructor led exercise, 15 mins)
- Build an Abstraction-Decomposition Space (group exercise, 45 mins)
- Work Domain Analysis (Issues) (30 mins)

Introductory thoughts on design (video)

Day 3

9. Cognitive Work Analysis, Part 2 (2.25 hours)

- Work Organization Analysis (60 mins)
- Social Transactions Analysis (75 mins)

10. Cognitive Work Analysis, Part 3 (4.75 hours)

- Work Domain Analysis, Joker One (30 mins)
- Work Organization Analysis, Joker One (30 mins)
- Work Task Analysis, Joker One (30 mins)
- Cognitive Transformations Analysis (75 mins)
- Cognitive Strategies Analysis & Cognitive Competencies Analysis (45 mins)
- Design a "Divert" Command & Control system (group exercise, 30 mins)
- Brief Product Review (15 mins)
- Decision Ladders for Recognition-Primed Decisions (30 mins)

Day 4

10. Cognitive Work Analysis, Part 3, wrap up (0.25 hours)

- Cognitive Work Analysis; Summary Review (15 mins)

11. Cognitive Requirements, Verification & Validation (2.25 hours)

- System & Cognitive Performance Metrics (30 mins)
- Cognitive Requirements Specifications (45 mins)
- A human is not a device! (45 mins)

12. Cognitive Products for Systems Acquisition (2.0 hours)

- The organizational cognition problem (60 mins)
- Training System Design (60 mins)

13. Cognitive Systems Engineering for the System Life Cycle (2.5 hours)

- System Life Cycle (75 mins)
- Cognitive Systems Engineering in Systems Acquisition (30 mins)
- Human Systems Integration (15 mins)

14. Cell Phones & Driving (0.75 hours)

- Design an in-vehicle communications system (45 mins)

Day 5

15. Design (2.75 hours)

- Design Patterns (45 mins)
- What is a Cognitive System? (30 mins)
- Planning System (30 mins)
- Functional Interface Design (60 mins)

16. Provocations (1.0 hour)

- Return on Investment (15 mins)
- Risk Perception (30 mins)
- Design of Future Systems (15 mins)

17. Spot the cognition (1.0 hours)

- Movie; Houston, we have a problem! (60 mins)

18. Summary (2.0 hours)

- Why do Systems Work? (30 mins)
- Cognitive Analysis; Tasks vs Work (45 mins)
- Summary Review of Workshop (30 mins)
- Workshop Evaluation (15 mins)

19. Exercises & Readings

20. Additional Material