

# Scheduling 2 Day Structure

## Day 1

### Session 1: Design and Structure your Schedule

1. The need for planning and scheduling
  - a. Purpose = communication not control
  - b. Understand audience
2. Simple -v- complex projects
3. Planning -v- scheduling
4. The project scheduler
5. Planning the project
6. Planning the schedule management
  - a. Scheduling Heuristics & Templates
  - b. Optimum update cycle
7. PDM Network building blocks Basic framework of a schedule
  - a. Activities & Milestones
    - i. Milestones
    - ii. Attributes of an activity
    - iii. Durations
  - b. Logic Links
    - i. Rules of logic
    - ii. Link types
      1. FS/SS/FF/SF
      2. Mandatory/discretionary/external
    - iii. Leads and Lags
  - c. Building the project 'Road Map'
8. **Exercise #1 – Construct Schedule.**

### Session 2: Major Project Schedules

1. Understanding the Project
  - a. Project scope & Objectives
2. Project Planning
  - a. Strategy and methods
3. Schedule Design
  - a. Optimum update cycle
  - b. Rolling Wave planning and Schedule Density
  - c. Gateways and phasing / project life cycle
  - d. Schedule Levels
  - e. Managing multiple schedules
4. Project Breakdown Structures
  - a. OBS, CBS, RBS
  - b. Work Breakdown Structure
5. **Exercise #2 – Develop a Work Breakdown Structure.**

## Scheduling 2 Day Structure

### Session 3: Schedule Analysis

1. Basic Critical Path calculations (Time Analysis)
  - a. Forward Pass
  - b. Back Pass
2. **Exercise #3 – Analyse Schedule.**
3. Free Float, Total Float & the Critical Path
  - a. Defining the Critical Path
  - b. Float calculations and definitions
  - c. Using float wisely
  - d. Integers -v- elapsed time
4. Calculating Durations
  - a. Options: Analogous -v- Parametric
  - b. Problems with production rates
  - c. Problems with effort driven durations
5. Guide to good practice (Scheduling Guides and Standards)
6. **Scheduling Puzzle.**

### Session 4: Scheduling History, Uncertainty & Risk Management

1. History of scheduling
  - a. Barcharts, Milestone Charts and OR
  - b. ADM / PDM / PERT
2. Confidence levels
3. What-if scenarios
4. PERT and Monte Carlo
  - a. PERT Analysis
  - b. Normal, Beta and Triangular distributions
  - c. PERT Merge Bias
  - d. Monte Carlo Analysis
  - e. Loops and Conditional Branches
5. **Exercise #4 – PERT Calculations.**
6. Risk Management
7. Logic and Duration issues
8. Probability and contingency
  - a. Normal variability
  - b. Risk Events (contingencies)
  - c. Buffers & management reserves (Unknown unknowns)

## Day 2

### Session 5: Resource Analysis and Costs

1. Constraints & Calendars
2. Resources: Types of resource

## Scheduling 2 Day Structure

- a. People and equipment
- b. Materials and consumables
- c. Money and work space
3. Resource allocation and constraints
  - a. Availability / calendars / limitations
  - b. Allocation Per day (time based) or Total (distributed or flexible)
4. Resource levelling options
  - a. Aggregation
  - b. Smoothing
  - c. Levelling
5. **Exercise 5 – Resource level Schedule.**
6. Resource problems
  - a. Resource schedule
    - i. No float – balanced by resource allocation
    - ii. Critical resources & resource float
  - b. Productivity
    - i. Multi-tasking
7. Cost Management
8. Cash flow analysis
  - a. Developing the baseline budget
  - b. Types of cash flow
  - c. The Funding gap

### **Session 6: Scheduling Tools Techniques & Emerging Methods**

1. Software tools
  - a. EPM focus
  - b. Project focus
  - c. Presentation focused GUI's
2. Line of Balance & Chainage Charts
3. **Exercise #6 – Develop a LOB Chart.**
4. Multi-Activity Charts
5. Emerging ideas
  - a. RDM
  - b. Momentology
  - c. Complexity Theory
6. The schedule as a motivator
  - a. Gaining commitment
  - b. Critical Chain / Viper
  - c. Motivation
  - d. The psychology behind the process

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### Session 7: Updating the Schedule & Reporting

1. Schedule review and revision
2. Schedule baselines
  - a. Contract Programs (old and new views)
  - b. Schedule Baselines
3. Stating the schedule - Gathering and recording actuals
  - a. Who to ask
  - b. Data to collect
    - i. Start and Finish dates
    - ii. Time to finish and % work complete
    - iii. Resources used and Costs incurred
  - c. Stating and editing for accuracy
4. Updating the schedule
  - a. Review status
  - b. Management action to
    - i. Lock in gains
    - ii. Mitigate losses
5. **Exercise #7 – Update the Schedule.**
6. Dealing with 'Bad News'
7. Schedule compression
  - a. Crashing (Mythical Man Month)
  - b. Fast tracking
8. Record keeping and progress information
9. Change Control
10. Reporting options and communication
  - a. Focusing the information
  - b. Coding structures
  - c. Standardising report formats
11. Types of Report
  - a. Management Reports – Milestone and Dashboards
  - b. Team reports – Bar charts
  - c. Variance and trend reports
12. Feedback & Benchmarking Managing for success

### Session 8: Managing Scheduling & Allied processes

1. The role of a PMO
  - a. Types of PMO
  - b. PjMO, PgMO, PtMO roles and responsibilities
2. Data management
  - a. Version control
  - b. Change management

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- c. Photo diaries & records
  - 3. Schedule assessment
    - a. PMI Practice Standard for Scheduling
    - b. The CIOB: *Guide to Good Practice in the Management of Time in Complex Projects*
  - 4. Dispute management
    - a. The Delay and disruption Protocol
    - b. Delay analysis options
  - 5. Allied processes
    - a. WBS / OBS / Control Accounts / Work Packages
    - b. Earned Value
      - a. Planned Value
      - b. Actual Cost
      - c. Earned Value
      - d. Variance identification and reporting
      - e. Forecast to Complete and At completion,
      - f. TCPI and trend analysis
    - c. Earned Schedule
  - 6. **Exercise #8 The Value of Teamwork**
  - 7. Summary & Course wrap Up.
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### Scheduling Core Papers

#1	A Guide to Scheduling Good Practice	<a href="http://www.mosaicprojects.com.au/PDF/Good_Scheduling_Practice.pdf">http://www.mosaicprojects.com.au/PDF/Good_Scheduling_Practice.pdf</a>
#2	Attributes of a Scheduler	<a href="http://www.mosaicprojects.com.au/PDF/Attributes_of_a_Scheduler.pdf">http://www.mosaicprojects.com.au/PDF/Attributes_of_a_Scheduler.pdf</a>
#3	Dynamic Scheduling	<a href="http://www.mosaicprojects.com.au/PDF/dynamic_scheduling.pdf">http://www.mosaicprojects.com.au/PDF/dynamic_scheduling.pdf</a>
#4	Links, Lags & Ladders	<a href="http://www.mosaicprojects.com.au/PDF/Links_Lags_Ladders.pdf">http://www.mosaicprojects.com.au/PDF/Links_Lags_Ladders.pdf</a>
#5	Schedule Float	<a href="http://www.mosaicprojects.com.au/PDF/Schedule_Float.pdf">http://www.mosaicprojects.com.au/PDF/Schedule_Float.pdf</a>
#6	Schedule Levels	<a href="http://www.mosaicprojects.com.au/PDF/Schedule_Levels.pdf">http://www.mosaicprojects.com.au/PDF/Schedule_Levels.pdf</a>

Mosaic's Scheduling Home Page is at : <http://www.mosaicprojects.com.au/Planning.html>