

Project Time Management

مقرر: إداره وقت المشروع

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PMG 212

Lecture 4



Agenda

- Basic Scheduling Concepts
- Scheduling
- Who is the Scheduler
- Attributes of Planner/Scheduler
- Importance of the Schedule
- Scheduling Tools
- Types of Schedules
 - The Checklist
 - The Schedule Board
 - Bar Chart
 - Look-Ahead Schedule
 - Linear Schedule
- Advanced Scheduling Methods
- Program Evaluation and Review Technique (PERT)
- Tasks in Scheduling
- CPM as a Management Tool
- Scheduling Terminology
- Relationships (Logic) – 4 Types

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Purpose of Scheduling

- Provides a step-by-step guide through project activities
- Allocates time required for each task
- Defines overall project duration
- Supports coordination among project team members
- Acts as a foundation for project control

Basic Scheduling Concepts

- Projects are broken into tasks or activities
- Tasks represent actions needed to achieve deliverables
- Activities may be sequential or simultaneous
- Tasks are often interdependent
- Task relationships define sequencing

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Scheduling

Scheduling in project management is the listing of activities, deliverables, and milestones within a project.

A schedule usually includes a planned start and finish date, duration, and resources assigned to each activity.

Scheduling

The 6 processes of time management in scheduling;

When people discuss the processes for building a schedule, they are usually referring to the first six processes of time management:

- **Plan schedule management**
- **Define project activities**
- **Sequence activities**
- **Estimate resources**
- **Estimate durations**
- **Develop the project schedule**

Scheduling

Benefits of project scheduling in project management

Project scheduling provides the following benefits:

- Assists with tracking, reporting, and communicating progress
- Ensures everyone is on the same page with tasks, dependencies, and deadlines
- Highlights issues and concerns, such as a lack of resources
- Identifies task relationships
- Monitors progress and identify issues early

Scheduling

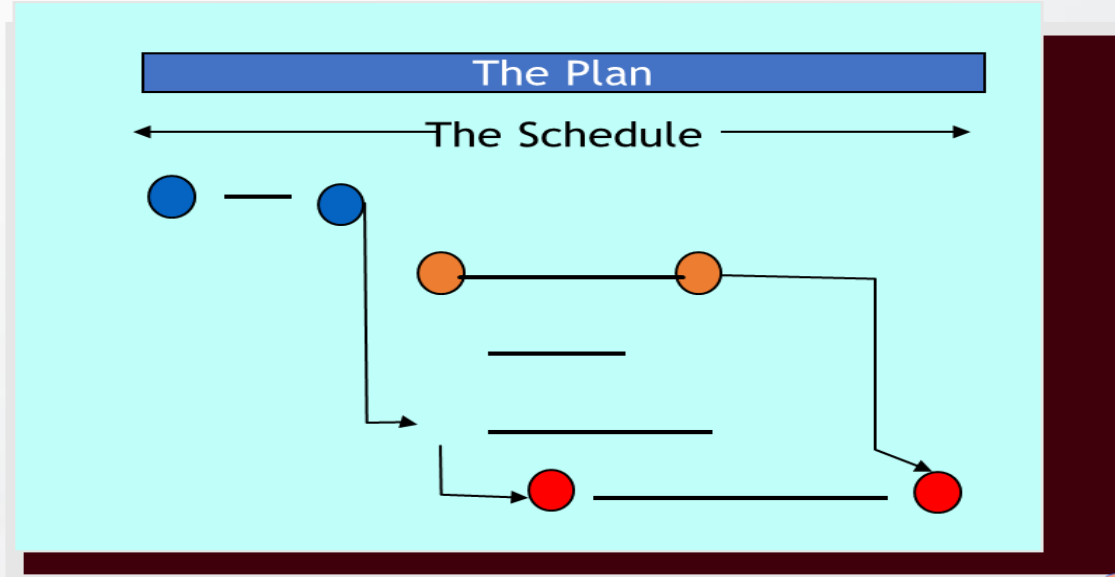


A GUIDE TO A WISE PERSON..... Not AN INSTRUCTION

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Who is the Scheduler



The **scheduler** translates the **PLAN** into **schedules**

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Attributes of Planner/Scheduler

- Possess **PEOPLE** skills!
 - Exercise humility and salesmanship
 - Exercise care when recommending various approaches
 - Do not alienate the managing parties
 - Ease off when needed
 - Emphasize his/her role is to **coordinate** and **integrate** ideas and **plans** into a coherent project schedule.
- امتلاك المهارات الشخصية (عدم الاعتماد على البرامج الحاسوبية)
 - التحلي بمهارات التواصل بين أقسام المشروع
 - العناية الشديدة عند التوصية باستخدام أساليب مختلفة
 - العمل على عدم نفور الأطراف ذات الصلة
 - الحد من المشكلات عند الحاجة
 - تنسيق ودمج الأفكار والخطط في جدول زمني متماسك

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Importance of the Schedule

Standardized scheduling techniques motivates the project team to:

- Think through the **entire project**
- **Predict** a realistic project **completion**
- Recognize **impacts** of **unexpected** events

Importance of the Schedule

Standardized scheduling techniques motivates the project team to:

- Identify **claims** or time extensions
- Coordinate **interfaces** and **reduce conflicts**
- Plan **resource requirements** and cash flow
- Serve as a **record** of the project's **progress**
- **Communication Tool**

Importance of the Schedule

1. Tells you **where you've been**.
2. Tells you **where you are**.
3. But most importantly, it tells you **where are you going!**

Must have **sufficient detail** to control the project

- Too much detail is cumbersome to maintain.
- Not enough detail and the analysis of the schedule is difficult.

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Scheduling Tools

- P6 (Primavera)
- Microsoft Project Planner (MSP)
- Suretrak (Primavera)
- Milestones, etc.. - Bar Chart
- TILOS- Linear Scheduling

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Types of Schedules

- Types of Schedules (Construction Projects)
- Schedules explain what, when, where, and how long
- Main tool to communicate the project plan
- Helps teams plan crews, time, and performance

Types of Schedules

1- The Checklist “Internal use, rarely shared externally”

- Simple “To-Do List”
- Used for very short-term planning
- Ensures no task is forgotten
- Easy to use - no tools or training needed

Limitations:

- No task dependencies
- No impact analysis if delays occur

Types of Schedules

2- The Schedule Board

- Visual board showing tasks vs time
- Crews or employees assigned by day/week
- Usually displayed in offices or workshops

Limitations:

- Difficult to reschedule
- No performance tracking
- Not distributed to all stakeholders

Types of Schedules

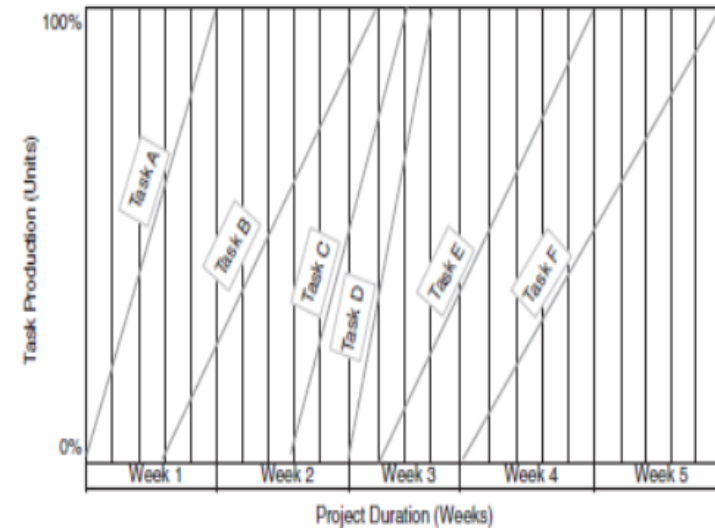
4- Look-Ahead Schedule

- Short-term detailed bar chart
- Covers 2-3 weeks
- Focuses on upcoming tasks and milestones
- Used with CPM schedules

Types of Schedules

5- Linear Schedule (Line of Balance)

- Used for linear projects (roads, runways, pipelines)
- Work is repetitive along distance
- Tracks progress vs time graphically
- Also called Velocity Diagram



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Advanced Scheduling Methods

- More sophisticated scheduling techniques
- Used for complex projects
- Common methods include PERT and CPM
- Focus on uncertainty and dependencies
- Support detailed project control

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Program Evaluation and Review Technique (PERT)

- Commonly used in research and development
- Accounts for uncertainty in task durations
- Uses optimistic, most likely, and pessimistic estimates
- Applies probability theory
- Useful for high-risk tasks

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Tasks in Scheduling

- Tasks consume time and resources
- Each task has a defined start and finish
- Tasks usually incur cost
- Derived mainly from the estimate
- Form the building blocks of the schedule

Work Breakdown Structure (WBS)

- Breaks project into logical sections
- Derived from the estimate
- Organized into multiple levels
- Moves from summary to detailed tasks
- Improves planning and control

Task Types

- Administrative activities
- Procurement activities
- Production activities
- Each type affects the schedule differently
- All may impact project completion

Task Durations

- Duration is time between start and finish
- Measured in workdays
- Hours are too detailed for control
- Weeks are often too broad
- Workdays balance accuracy and usability

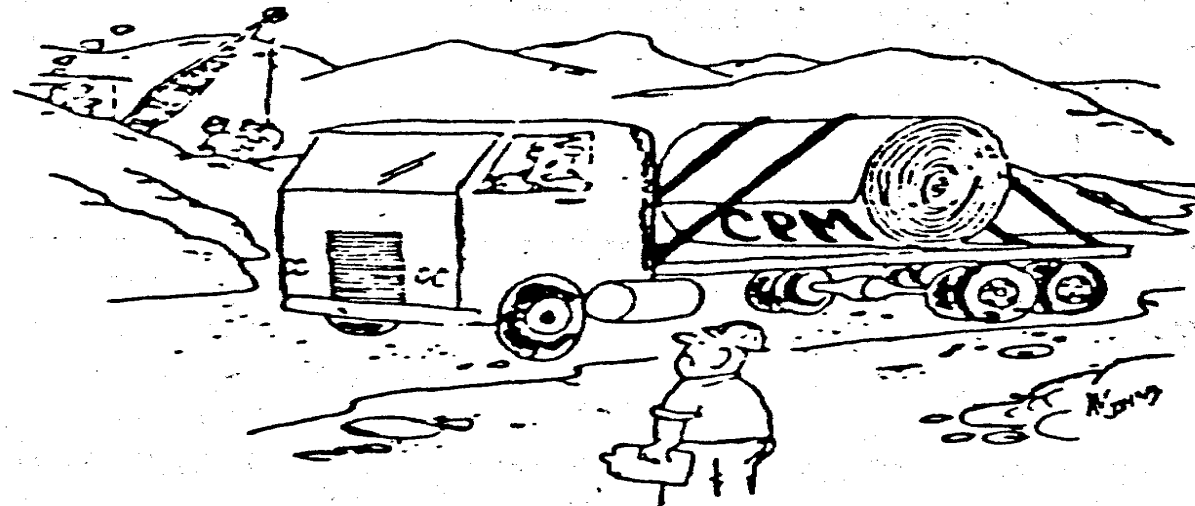
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CPM as a Management Tool

- Provides baseline for time control
- Links tasks through dependencies
- Compares planned vs actual progress
- Helps identify trends and risks
- Supports informed decision-making

Scheduling Methodology



"Where do you want this CPM chart?"

Critical Path Method

The calculation of the earliest and latest start and finish dates of activities based on their duration's and relationships to other activities

a resource-utilization algorithm for scheduling a set of project activities

Item	Price
A	100
B	100
C	100
D	100
E	100
F	100
Sum	600

Activities

- The Basic element into which a project is subdivided for scheduling a network (CPM)
 - Has a definable start and finish
 - Consumes resources
 - Is assignable
 - Is measurable
 - Is defined by a **Work Package**
 - Is a Physical Task for Construction

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Scheduling Terminology: Work Package

- A group or number of Engineering/Construction Deliverables that will enable Procurement or Construction to accomplish a meaningful task. WP is the lowest level of a WBS.
 - All of the **Data Sheets & Specifications** required for a Purchase Order.
 - All of the **Drawings & Details** necessary to Locate, Excavate, Form and Pour a Foundation
 - Earthwork
 - Foundation
 - Cabling

Scheduling Terminology: Work Package Template

CONSTRUCTION WORK PACKAGE																				
Project Name:												Company Logo								
Project CWP WBS No:																				
CWP			Plant					Area					Discipline					Sequence No		
C	W	P	-						-						-					
Description:																				

Section No.	Section Description	# of Sheets
1.0	Scope of Work	
2.0	CWP Reference List	
3.0	Engineering Information	
4.0	Craft / Manpower	
5.0	Direct Field Equipment and Materials	
6.0	Safety	
7.0	Quality	
8.0	Regulatory Approvals and Permits	
9.0	Sub-contracts (Construction Contractor)	
10.0	Vendor Support	
11.0	Rigging Studies	
12.0	Scaffolding	
13.0	Special Equipment, tools and consumables	
14.0	Waste Management	
15.0	Risk Register	
16.0	WorkFace Planning	
17.0	Project Controls	
18.0	Turnover Documents	
19.0	3D Model Shots of CWP	
20.0	Submittals	
21.0	Contact List	

Scheduling Terminology: Milestone

- Is a **GOAL** to be achieved.
 - Can be either a Start or Finish Achievement
 - Is a single point in Time
 - Has no duration
 - Has no resources
 - Has a specific and unique Definition
 - It is either YES or NO

Scheduling Terminology

- **Predecessor** = An activity that must occur before another activity. A predecessor activity controls the start or finish date of its successor(s). An activity can have multiple **predecessors**, each with a different relationship to it.
- **Successor** = An activity that must occur after another activity. An activity can have multiple successors, each with a different relationship to it.

Scheduling Terminology

Predecessor and Successor Synonyms مرادفات



Dependencies

Prerequisites

Interface requirements

Links

Logic relationships "To" and "From"

التابعين (الاعتماديين)

المتطلبات المسبقة

متطلبات الواجهة/الربط

الروابط

العلاقات المنطقية "إلى" و "من"

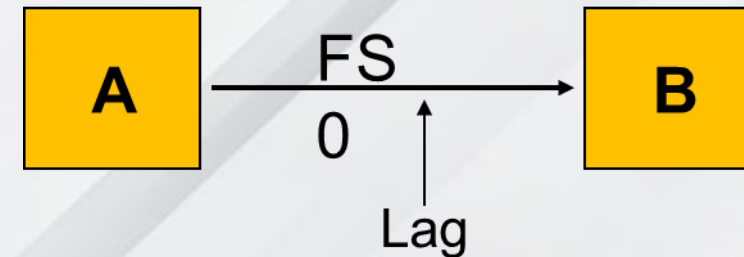
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Relationships (Logic) – 4 Types

Finish to Start - FS - A

relationship in which the predecessor activity must **Finish** before its successor activity can **Start**.



Relationships (Logic) – 4 Types

Finish to Finish - FF - A

relationship in which the **Finish** of a successor activity depends on the **Finish** of its predecessor activity.



Relationships (Logic) – 4 Types

Start to Finish - SF - A

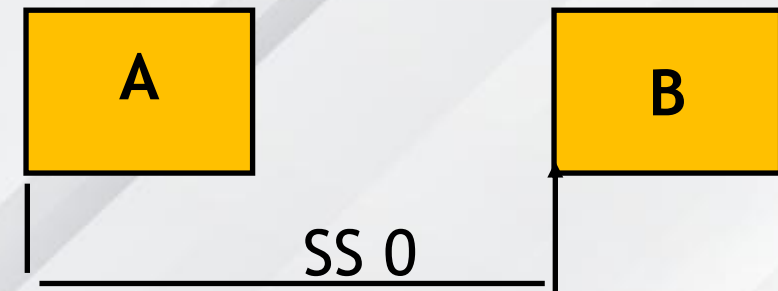
relationship in which the **Start** of the predecessor activity controls the **Finish** of a successor activity. **Not used**



Relationships (Logic) – 4 Types

Start to Start - SS - A

relationship in which the **Start** of the predecessor activity controls the **Start** of a successor activity .





Thank You