



COURSE INTRODUCTION

ARE 413

CONSTRUCTION MANAGEMENT

BY

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LECTURER

CONSTRUCTION ENGINEERING & MANAGEMENT DEPT

FEBRUARY 13/2006



ARE 413 Overview

- Syllabus
- Text
- Course description
- Course objectives
- Software
- Course Website
- Grading plan
- Class participation / feedback
- Term projects
- Assignments/ HWs
- Examinations
- Contact information



ABOUT ME

Mr. Mohammed Jalaluddin

Construction Management (ARE 413)

Contact Information & Class Timings

INSTRUCTOR:

Mr. Mohammed Jalaluddin

860-1623 (Day)

860-5221 (Evening)

Email: jalals@kfupm.edu.sa

OFFICE HOURS:

Office at 331 Building 19

Sunday 1:30 P.M. – 3:30 P.M.

Tuesday 1:30 P.M. – 3:30 P.M

After class and by appointment

TIME & PLACE:

Saturday, Monday and Wednesday

9:00 - 10:00 AM

Room 450 Building 19.

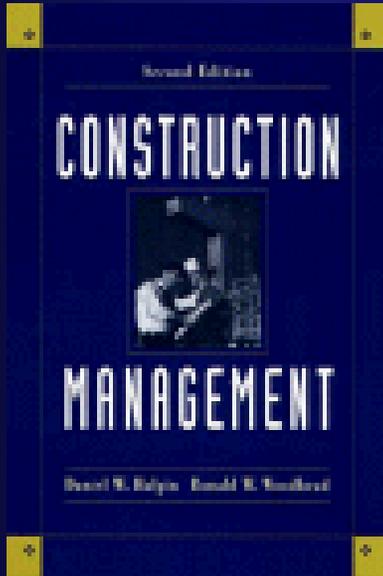


AGENDA

ARE 413: CONSTRUCTION MANAGEMENT

1. What are the aims & objectives of the course
2. What will be covered in this course?
3. What is the importance of this course ?
4. What is expected to be successful in course?

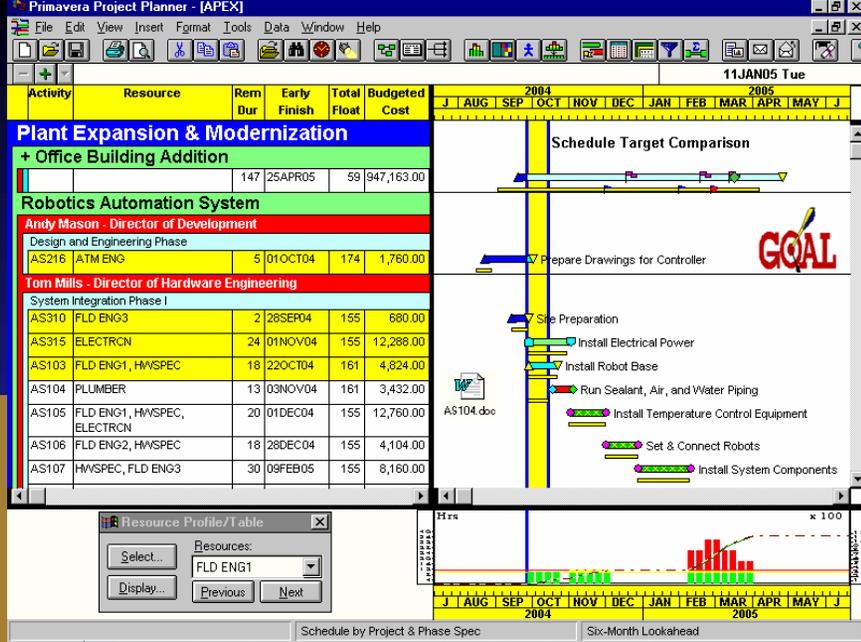
Text



- “Construction Management”, by Daniel W. Halpin and Ronald W. Woodhead, 2nd Edition , John Wiley & Sons

- *Class Notes and Handouts*
- *Course material will be made available through the **WEBCT** web site*





Software –

- Access to project management software is a benefit.
- Primavera
- MS Project
- Timberline/US Cost
- Expedition

Group	Description	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Amount
20000.00	TRADE GENERAL REQ'MNTS	577,694	27,557	262,782	54,144	58,591	980,768
20500.00	DEMOLITION	166,134	5,254		107,112		278,501
21000.00	SITE PREPARATION	8,258			5,719		13,977
21500.00	EARTHWORK	690,147	19,744		599,292		1,309,183
23000.00	PAVING AND SURF						

TIMBERLINE OFFICE

29500.00	ROUGH CARPENTRY						
31000.00	FINISH CARPENTRY						
31500.00	ARCHITECTURAL						
32000.00	WATERPROOFING						
32500.00	INSULATION						
33000.00	EIFS SYSTEMS						
Estimate Contingency		1,019,822					5.000 %
Total					21,295,262		

Spread Variance | Create Variance | OK | Cancel | Help

PRIMAVERA
Expedition
 Complete Project Control



Course Aims & Objectives

- At the completion of this course, the student will:
 - Understand the construction industry, its process, characteristics , principal project phases
 - Identify, describe, and discuss the types of project delivery methods, contracts, organization Structures
 - Identify and apply planning & scheduling techniques, tools and computer software
 - Understand key basic elements of the construction estimation.
 - Identify and be familiar with the application of various construction equipment
 - To gain an understanding of the principal concepts and issues in Value Engineering, Construction productivity; construction safety etc.

Course Organization:

The course is divided into major subject areas:

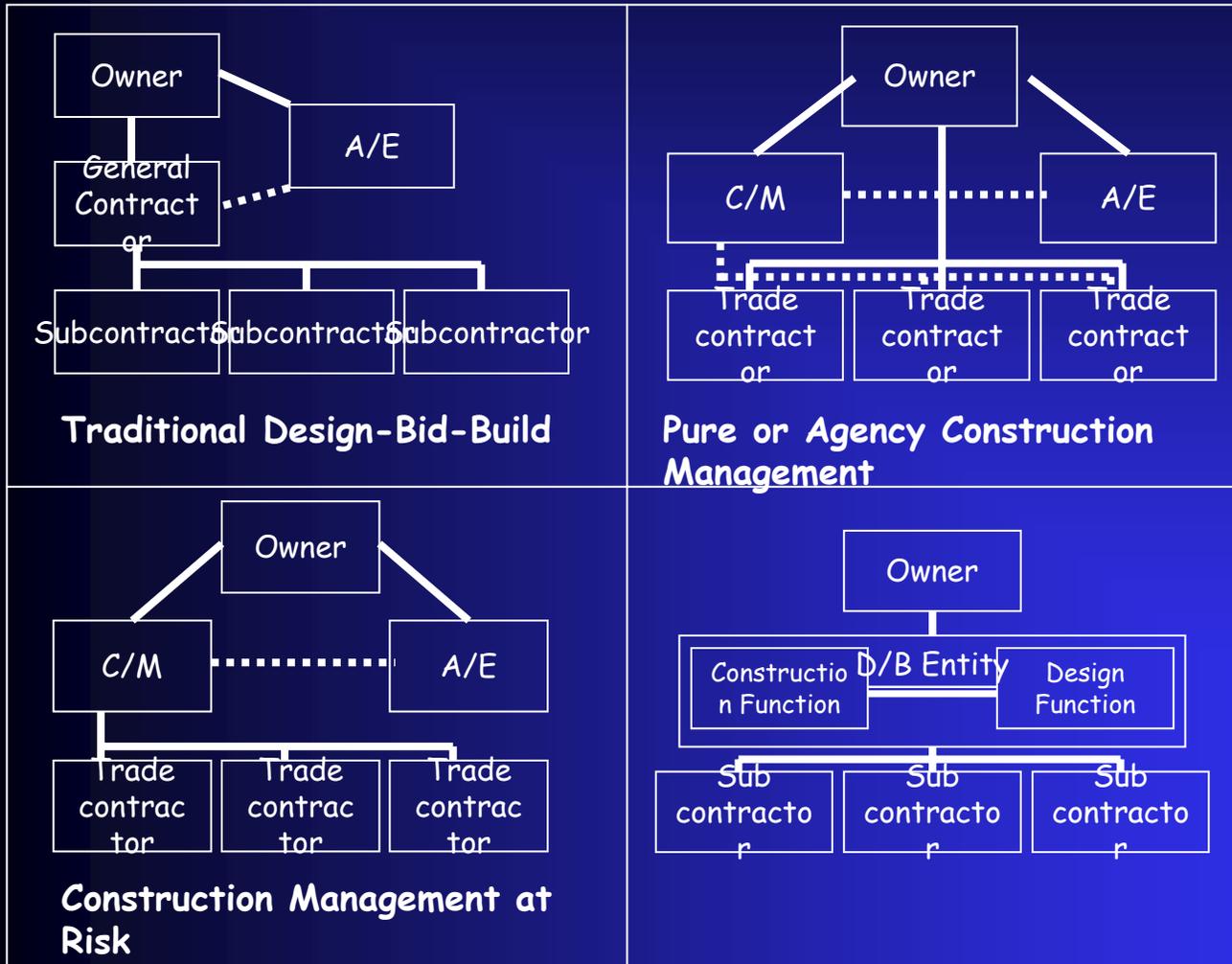
PART - A: CONSTRUCTION INDUSTRY



Haradh Gas Plant

- ✓ Introduction to the construction industry
- ✓ Unique characteristics of Construction projects
- ✓ Difference between manufacturing and construction
- ✓ Types of construction projects
- ✓ Size of Construction Industry
- ✓ Key players and participants, roles, and relationships
- ✓ Project Phases and project lifecycles

PART - B: Project Delivery Methods



———— Contractual Relationship
 Communicational Relationship

- ✓ Overview of the Project Delivery Methods:
- ✓ Traditional
- ✓ Design-Build
- ✓ Construction Management
- ✓ Build Operate Transfer (BOT).

PART - B: Construction Contracts

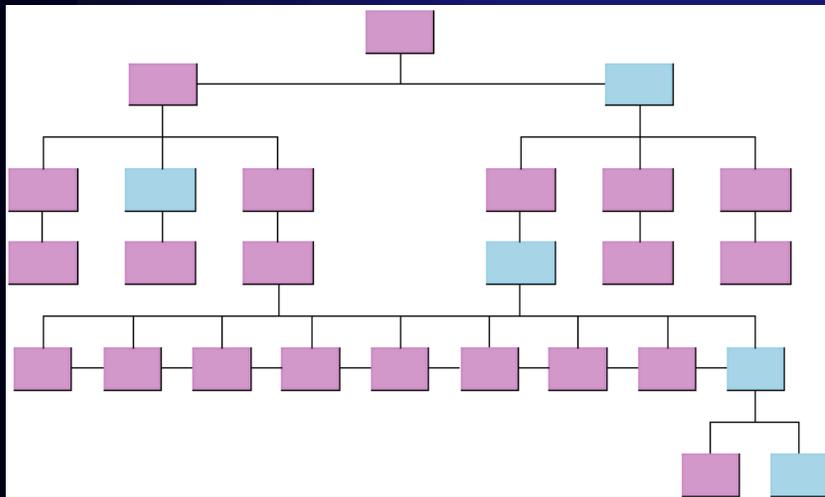
Construction Contracts

Types of Construction Contracts, Lumpsum, Unit Price and Cost Plus types of contract, Advantages and disadvantages of each .



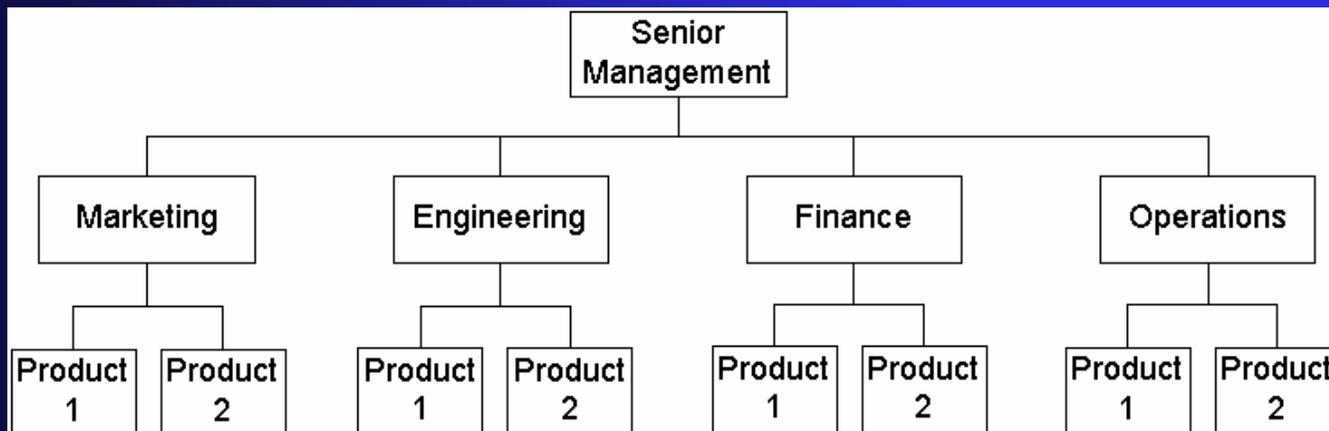
LEGEND	
FFP	FIRM FIXED PRICE
CPFF	COST PLUS FIXED FEE

PART - C: Management and Organization Structure



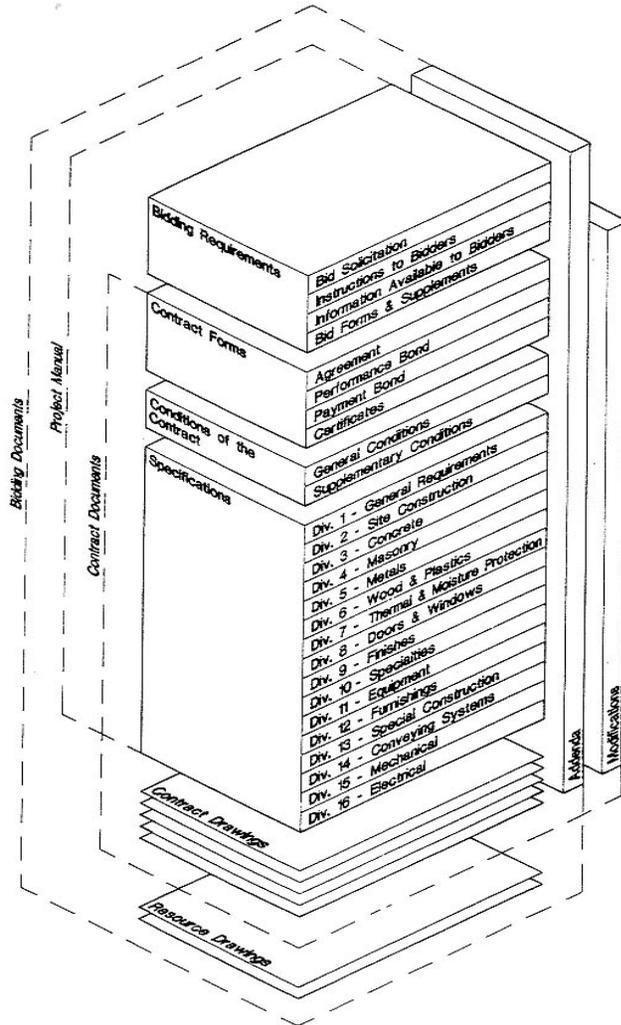
Overview of the Management and organization structure:

- ✓ Legal Aspects
- ✓ Types of organizational structure/models
- ✓ Project team concepts.



PART - D: Contract Procurement Process

Construction Documents

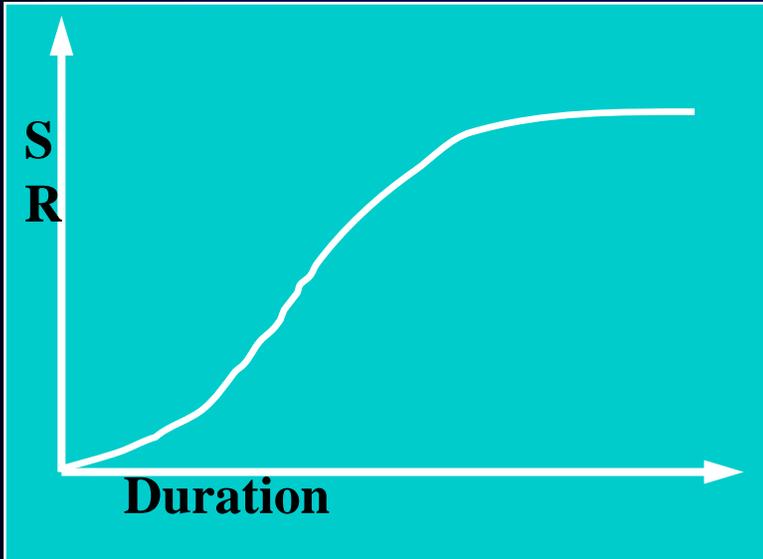


FF/3-B

Overview of the contract procurement process:

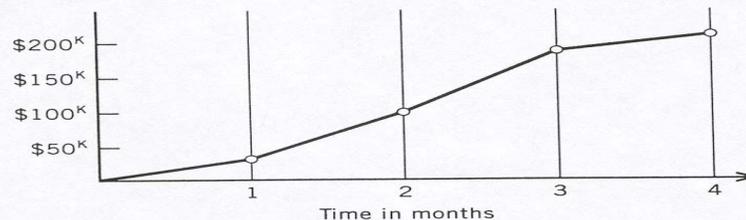
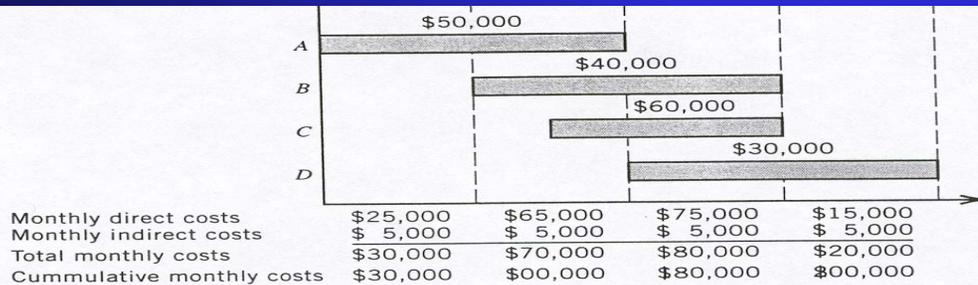
- ✓ Contract award, bid package,
 - ✓ General conditions, special conditions and contract documents,
 - ✓ Specifications
- Types of specifications, technical division
- ✓ Bonds, liens etc

PART - E: Financial Management: Project Funding, Cash flow



Overview of the Financial Management and Accounting: for the Construction Industry:

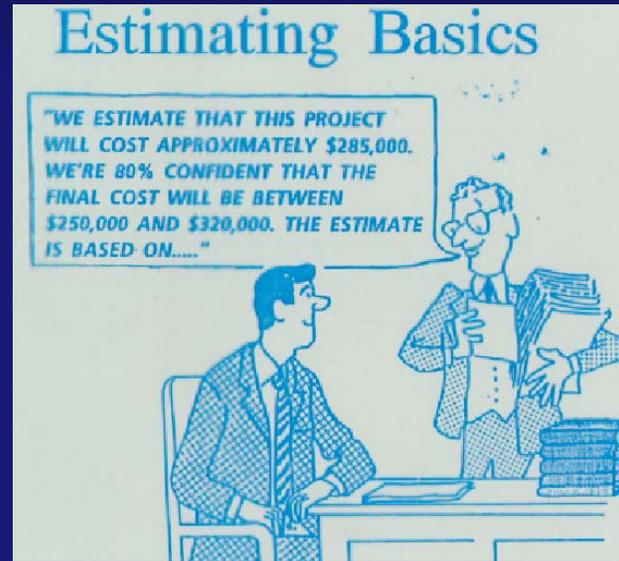
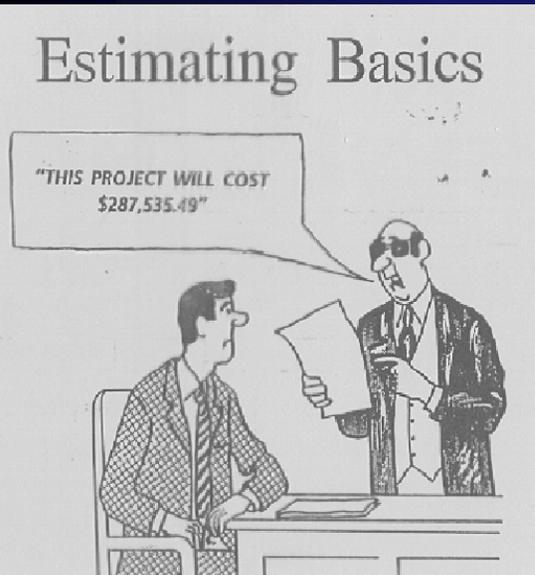
- ✓ Project Finance,
- ✓ Sources of finance and Cash flow analysis and projection.



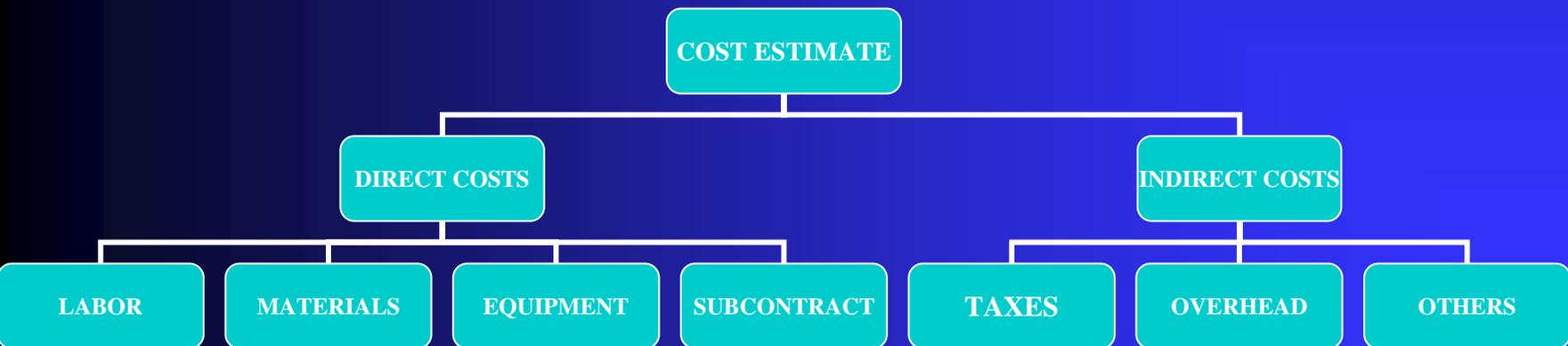
The letter "K" is used to indicate thousands of dollars.

Figure 7.1 Development of S-curve.

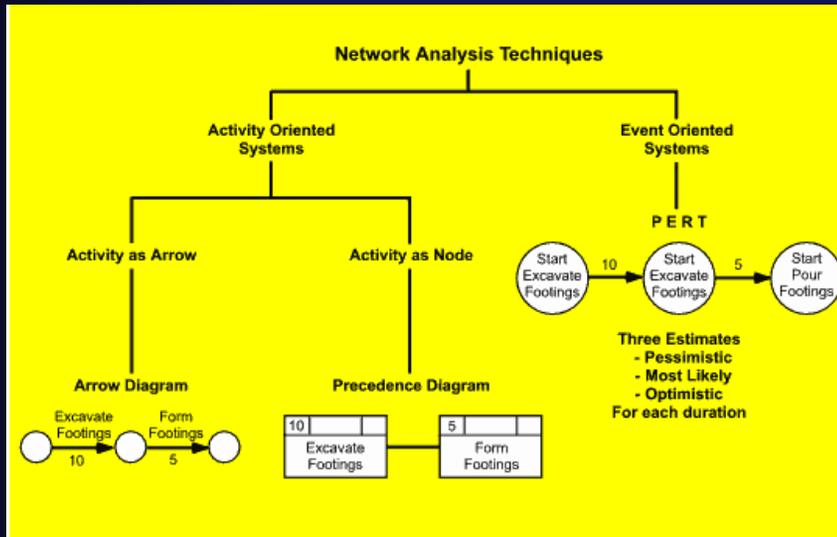
PART - F: Construction Estimation



Types of Estimates, Pre-Construction estimates and Detailed Estimates, Estimating approach, Quantity Take-off. Examples of Site work, excavation, concrete work etc. Demonstration of Computerized Construction Estimation Software



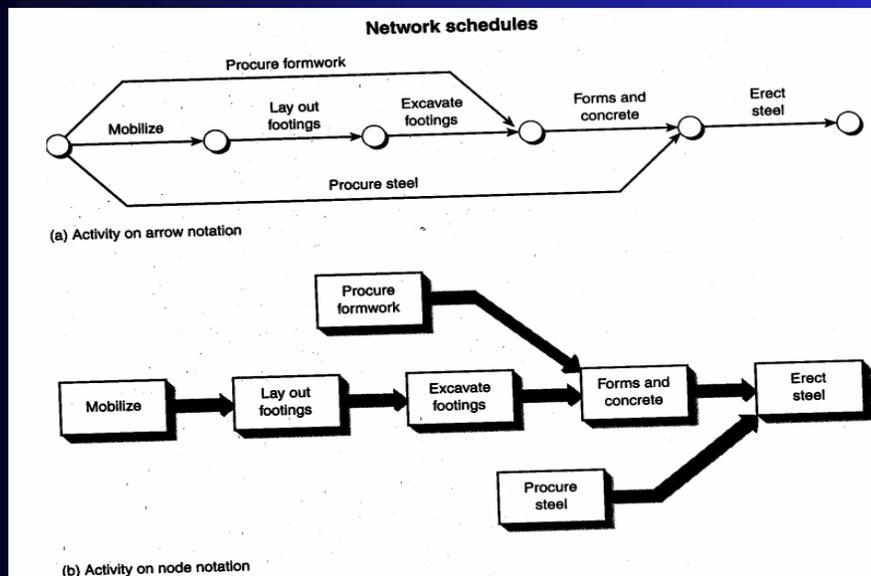
PART - G: Construction Planning & Scheduling



An Overview of the Planning and scheduling tools , techniques, plus an introduction to the background, Principles and techniques of Critical Path Method (CPM) Scheduling methods - bar charts, PERT and CPM;

Network construction; activity durations; forward pass, backward pass, float and critical path calculations ,

Use of Computers software.



PART - H: Construction Equipment



- ✓ Types of Equipments
- ✓ Selection of Equipment,
- ✓ Equipment cost, ownership costs, operating costs,



PART - I: Special Topics : Construction Management



- ✓ Value Engineering
- ✓ Construction productivity,
- ✓ Construction safety,
- ✓ Risk Management,
- ✓ Total Quality Management and Partnering

PART - J: Information Technology and Construction Industry

PRIMAVERA
Teamplayer Print Preferences Help Logout

Resources Projects Portfolios BuildId: 08-28-01 17:00

View: Activity List for Project Office Building Addition ae [Add activities to project](#)
[Customize this page](#)

Search by Activity Name containing

Activity Name	Start Date	Finish Date	Remaining Duration	Percent Complete	Primary Resource	Mark as Completed
Design Building Addition **blshh**	Jul/19/99	Aug/28/99	0.00m	100.00%		<input checked="" type="checkbox"/>
Define System Requirements	Jul/20/99	Aug/3/99	0.00m	100.00%	tong2	<input checked="" type="checkbox"/>
System Design	Aug/2/99	Aug/27/99	0.00m	100.00%	adstgdfg	<input checked="" type="checkbox"/>
Prepare Drawings for Temp Control Equipment	Aug/18/99	Aug/27/99	0.00m	100.00%	rsrs15	<input checked="" type="checkbox"/>
Prepare Drawings for System Controller	Aug/18/99	Aug/25/99	0.00m	100.00%		<input checked="" type="checkbox"/>
Approve System Design	Aug/30/99	Sep/1/00	0.00m	100.00%		<input checked="" type="checkbox"/>
Review and Approve Designs	Aug/30/99	Sep/21/99	0.00m	100.00%		<input checked="" type="checkbox"/>
Review and Approve Temp Control Equipment	Aug/30/99		0.00m	100.00%		<input checked="" type="checkbox"/>
Assemble Brick Samples	Sep/20/99	Sep/25/99	0.00m	100.00%		<input checked="" type="checkbox"/>
Begin Building Construction	Sep/20/99	Sep/20/99	0.00m	?	Power Generation Division	<input checked="" type="checkbox"/>

1 to 10 of 170 [Next 10 >>](#)

- ✓ Overview of the Emerging Computer applications in construction industry:
- ✓ Computer applications in Planning & scheduling,
- ✓ Computer applications in construction Estimation
- ✓ Computer applications in contract administration and specification etc.

PRIMAVERA
Teamplayer Print Preferences Help Logout

Resources Projects Portfolios BuildId: 08-28-01 17:00

View: Executive Summary

Organize By
hydra-convey-auto

Legend: Critical Warning Acceptable Exceptional

hydra-convey-auto Summary Date: Jul/11/01

The projects are complete. It is -18,909\$ or over budget and -8.26m or -0.35% ahead of schedule.
If current trends continue, at project completion:

- The finish date will be Dec/22/00 or 0.01m late.
- The total cost will be between (on budget) and on or on budget

Automated System Summary Date: Jul/11/01

The project is 0.36% complete. It is \$ 3,195 or 0.03% under budget and 0.56m or -0.07% ahead of schedule.
If current trends continue, at project completion:

- The finish date will be Mar/30/00.
- The total cost will be between \$ 101,761 or 0.10% over budget and \$ 93,332 (0.01% over budget).

Conveyor System Summary Date: Jul/11/01

The project is 0.51% complete. It is -22,1631 or -0.51% over budget and -7.70m or -0.51% ahead of schedule.

1 to 2 of 2



Attendance and Participation:

Attendance and Participation:

Regular class attendance is compulsory and **missing classes/quizzes** will lower the component of the grade. Students are expected to attend all lectures, quizzes, participate in the class discussion and submit all assignments on time.

Exams, Assignments & Quizzes:

Quizzes will be conducted approximately **once in a week** and **assignments** will be conducted at **regular intervals**. Each student is responsible to submit assignments and attend quizzes and exams.

GRADING

- Grading policy for this course will be based on the quizzes, assignments and exams as shown in the following table.

Quizzes	15 %
Assignments	10 %
Midterm	25 %
Term Project	20%
Final Exam	30%



SCHEDULE

Week	Date	Lecture	Exams/Quiz/Assignments
1	Feb 11 (S)	Course Registration	
	Feb 13 (M)	Course Introduction	
	Feb 15 (W)	Overview of Construction Industry,Size, Key Players	Reading Assignment # 1
		Introduction to Construction Management, Process, Environment	NCB Reports on Saudi Construction
Feb 16 (Th)	Normal Saturday Class		
2	Feb 18 (S)	Characteristics of Construction projects,Types of Construction projects	
	Feb 20 (M)	Major phases and life cycle of construction project	
	Feb 22 (W)	Activities & responsibilities of major project phases,Construction documents	Quiz # 1
3	Feb 25 (S)	Project delivery methods	
	Feb 27(M)	<ul style="list-style-type: none"> Traditional 	
	March 1 (W)	<ul style="list-style-type: none"> Design-build ,BOT Construction management 	Assignment # 1
		Construction Documents, Bid Package	Quiz # 2
4	March 4 (S)	Contract Procurement process,contract award,bid package	Reading Assignment # 2
	March 6 (M)	Contract Procurement process,contract award,bid package	
	March 8 (W)	Contractor selection,Conditions of contract:General & Special	
		Specification, divisions, formats, Types of specifications, bonds etc	Quiz # 3



SCHEDULE

contd

5	March 11(S)	Bid Pacakge	Assignment # 2
	March 13(M)	Construction contracts	
	March 15 (W)	Construction contracts (Contd.)	Quiz # 4
6	March 18 (S)	Midterm Exam	MAJOR -1
	March 20(M)	Management and organization structure,Legal Aspects	
	March 22 (W)	Planning and scheduling tools , techniques	
7	March 25 (S)	WBS	
	March 27 (M)	Background: Contraction Project Planning ,CPM,PERT	
	March 29 (W)	Forward pass, backward pass, float and critical path calculations	Quiz # 5
8	April 1(S)	Midterm Break	Assignment # 3
	April 3(M)	Critical path calculations.	Reading Assignment # 3
	April 5 (W)	IT application for Planning & Scheduling	Quiz # 6
9	April 8 (S)	Computerized Scheduling software:	Assignment # 4
	April 10(M)	Construction Estimation Processes,Types of estimates	
	April 12 (W)	Pre-Construction estimates and Detailed EstimatesEstimating approach	Quiz # 7
10	April 15 (S)	Types of Estimates (Contd)	
	April 17 (M)	Project Finance, Sources of finance and	
	April 19 (W)	Cash flow analysis and projection,	Quiz 8

contd



11	April 22 (S)	Computerized Construction Estimation Software	Assignment # 5
	April 24(M)	Computerized Construction Estimation	
	April 26(W)	Computerized Construction Estimation	
12	April 29 (S)	Construction Equipment: , Selection of Equipment	Reading Assignment # 4
	May 1(M)	Construction Equipment: , Selection of Equipment	
	May 3(W)	Equipment cost, ownership costs, operating costs	Assignment # 6
Types of Equipments		Quiz 9	
13	May 6 (S)	Depreaction Methods	Assignment # 7
	May 8 (M)	Construction Materials	
	May 10 (W)	Labor	Quiz 10
14	May 13(S)	Construction productivity	
	May 15 (M)	Value Engineering Video	
	May 17 (W)	Value Engineering	
15	May 20(S)	Total Quality Management	
	May 22(M)	Construction safety (Video)	Assignment # 8
	May 24(W)	Construction safety	
16	27 May (S)	Term Project Presentations/ Last day of classes	
	29 May - 8 June	Final Examination Week	Final Exam



Summary

- This is about **YOUR** course
- Basics of Construction Management
- Work with the team spirit
- Keep up with quizzes/assignments
- Attend classes

THANK YOU

■ QUESTIONS

