



College of Engineering
GE106: Introduction to Engineering Design

Project Planning and Literature Review

By

Matthew Amao

Outline

- **Project Planning**
 - *Introduction*
 - *Project Parameters*
 - *Phases of Project Planning*
 - *Developing the Project's Plan*
 - *Work Breakdown Structure (WBS)*
 - *Task Dependencies*
 - *Network Charts*
 - *Responsibility Matrix*
 - *Gantt Chart Basics and Examples*
 - *Project Planning Summary*
- **Literature Review**
 - *Why Do a Literature Review?*
 - *Literature Review Model*
 - *Where do you Search?*
 - *Basic Steps for Conducting a Literature Review*
- **Group Activity**
- **Summary**

Project Planning: Introduction

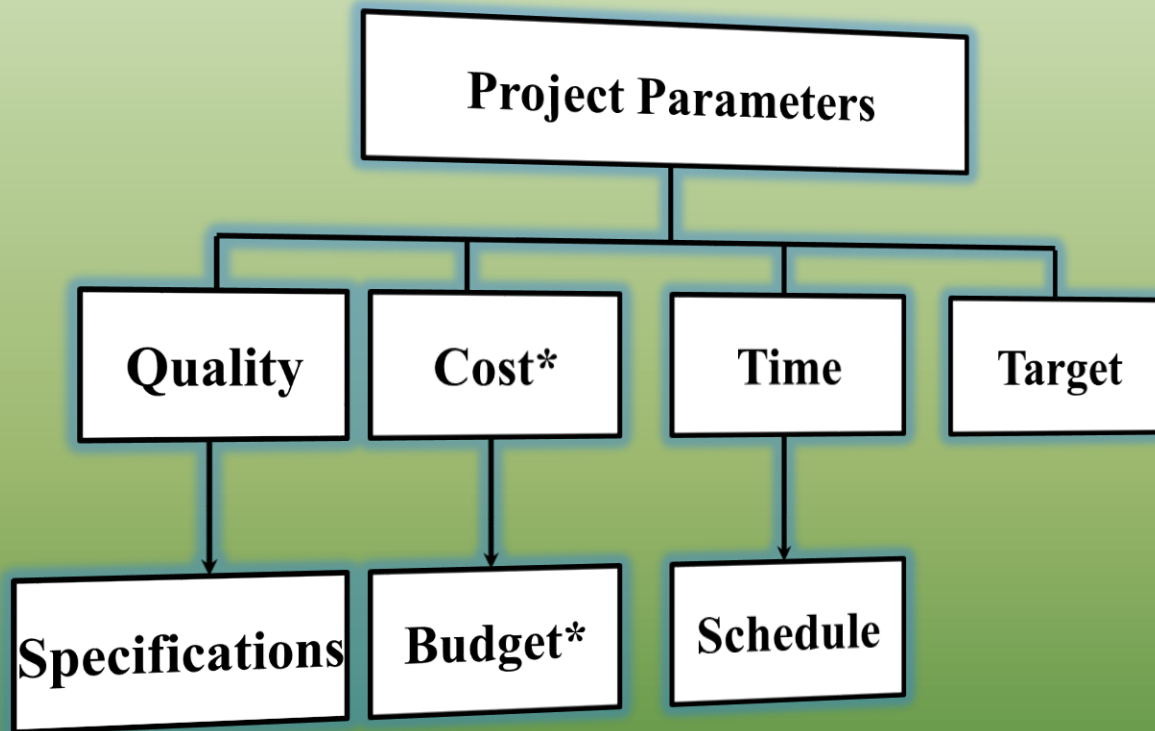
- Studies report that nearly half of all projects initiated are not completed because of:
 - Assigning tasks to the wrong individuals
 - Poor Planning of Tasks
 - Failure to Implement the tasks
 - Poor Estimation of the difficulty or risks or resources
 - Bad Management



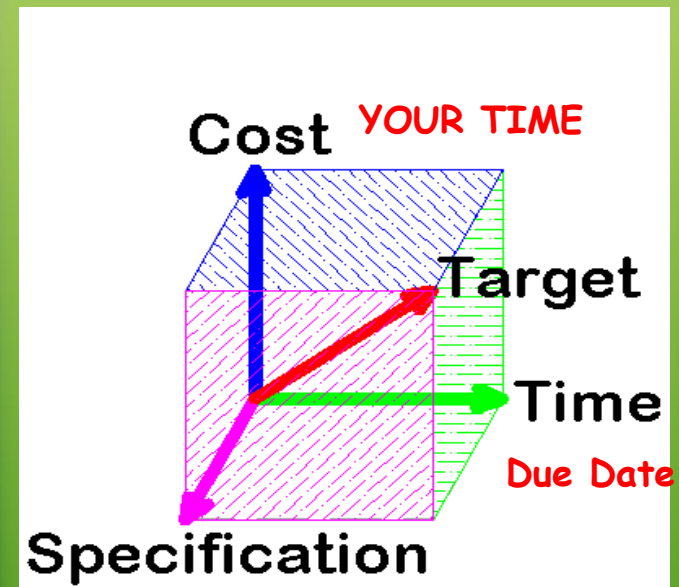
You do not manage time
You manage your commitments

The Main Reason For Failure: **You Don't Start Soon Enough**

Project Parameters



GE106 project



Phases of Project Planning

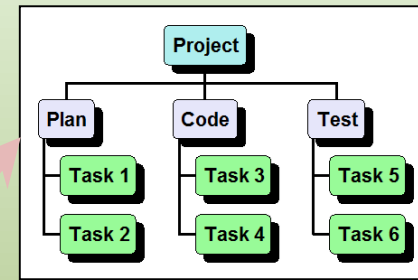
- **Define** the project's scope* (including literature review given at the end of these slides)
- **Develop** the project's plan
- **Implement** the plan
- **Control** the process
- **Complete** the project



What is a project plan?

- Can be as simple as a list of sequences for a *small project*
- Can be more complex with charts, tables, costings etc. for a *larger project*

Develop the Project's Plan



Break Down Project Tasks (WBS)*

Time Estimation & Dependencies

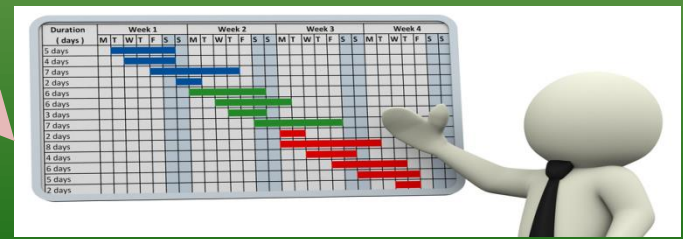
Assign Tasks

Develop Gantt Chart

Review & adjust

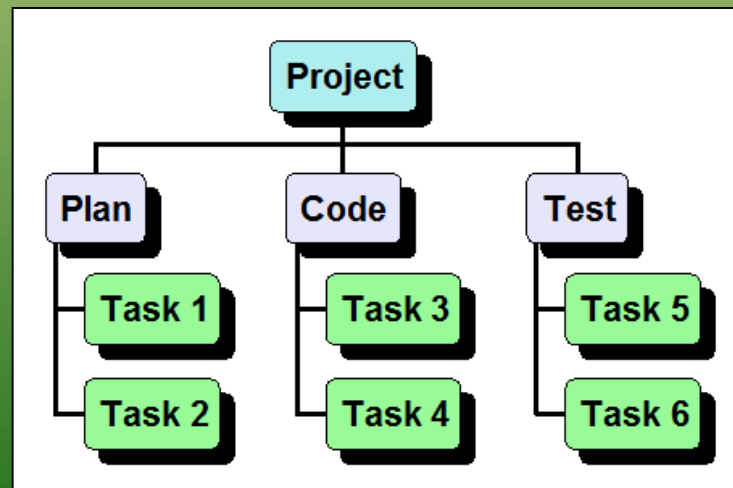
- Task 1 – 20hrs
- Task 2 – 10hrs – **FS 1**
- Task 3 – 15hrs – **FS 1**
- Task 4 – 25hrs – **FS 2**

Task	Hrs.	Who
Act. 1	10	Ali
Act. 2	7	Ahmed
Act. 3	13	Omar



Work Breakdown Structure (WBS)

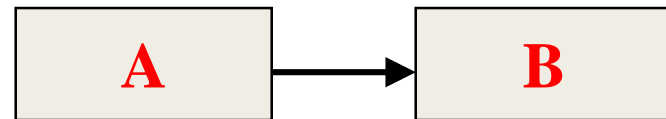
- A hierarchical representation of activities
- It starts with the major project tasks to be accomplished
- It breaks the project tasks into actionable* pieces of work, segmenting elements into appropriate sub-levels
- Number of levels depends on project complexity



Task Dependencies

- Dependencies are the relationships between activities
- “Finish to Start (FS)” example

Task B cannot begin until
Task A is complete



- Examples of other dependency types:

Start-Start (SS): have to start at the same time

Finish-Finish (FF): have to end at the same time

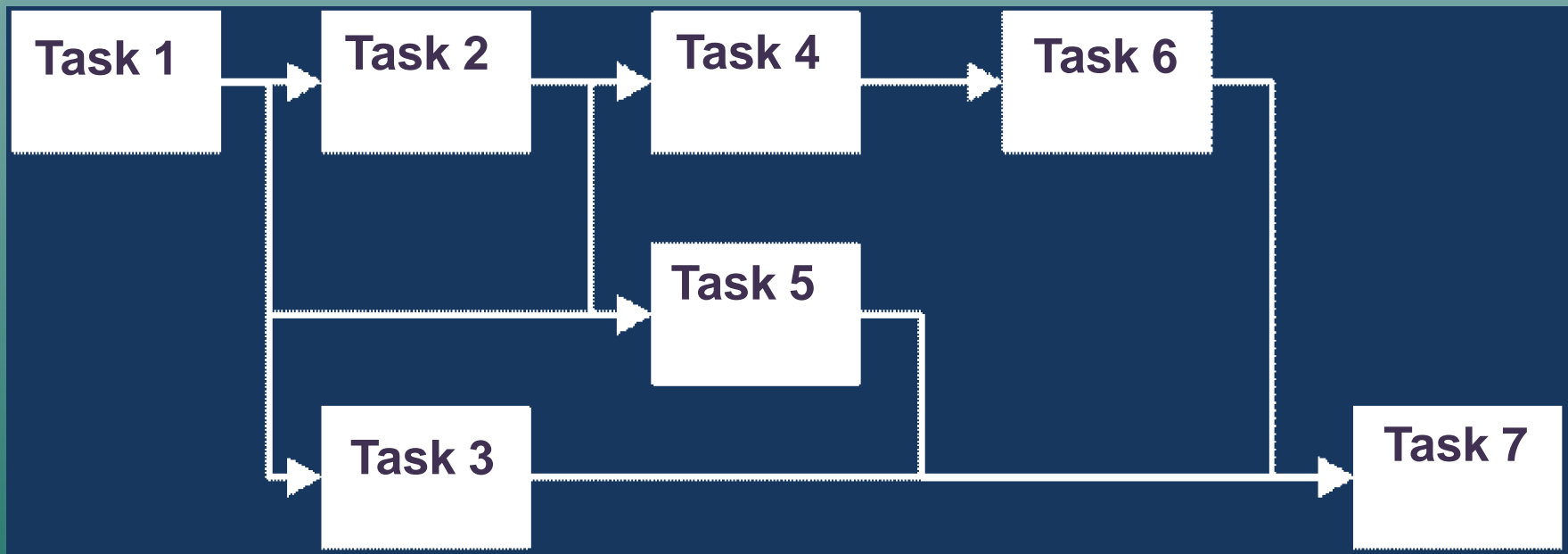
Unconstrained: the task can start at any time

Network Charts

- Task 1 – 20hrs
- Task 2 – 10hrs – **FS 1**
- Task 3 – 15hrs – **FS 1**
- Task 4 – 25hrs – **FS 2**

- Task 5 – 12hrs – **FS 1,2**
- Task 6 – 20 hrs – **FS 4,2**
- Task 7 – 10 hrs – **FS 6, 5, 3**

Note: FS=Finish to Start



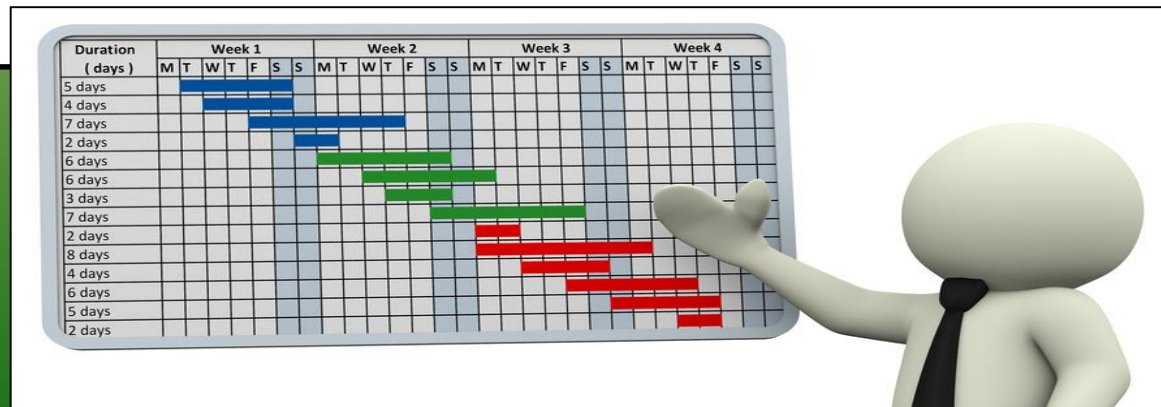
Responsibility Matrix

Creates accountability by assigning each task to the person with the right skill.










Task	Hours Needed*	Who
Activity 1	10	Ali
Activity 2	7	Ahmed
Activity 3	13	Abdullah

Gantt Chart Basics

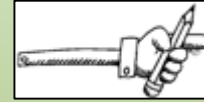
- Generated from [Network Chart](#)
- In a single page, it graphically shows :
 - ✓ Timeline for each task
 - ✓ Dependencies of tasks
 - ✓ Progress towards project completion
- May include initials of the responsible for each task
- "Milestone" events marked with a special symbol



Gantt Chart Example*

Task	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7
Literature Review							
Requirement Analysis							
Human Factors							
Problem Formulation							
Progress Report							
Concept generation							
Creative Design							
Design evaluation							
Final Report							

Project Planning Summary

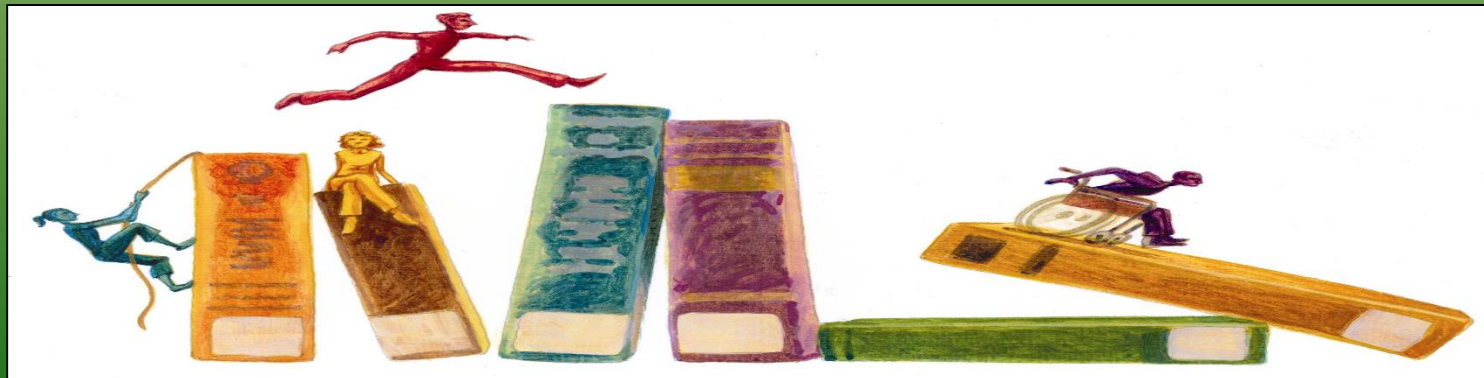


- Create WBS to identify activities
- Estimate time durations
- Note dependencies between tasks
- Assign the right person to the right task
- Schedule activities using a Gantt chart
- Put plan into action
- Document, document, document !



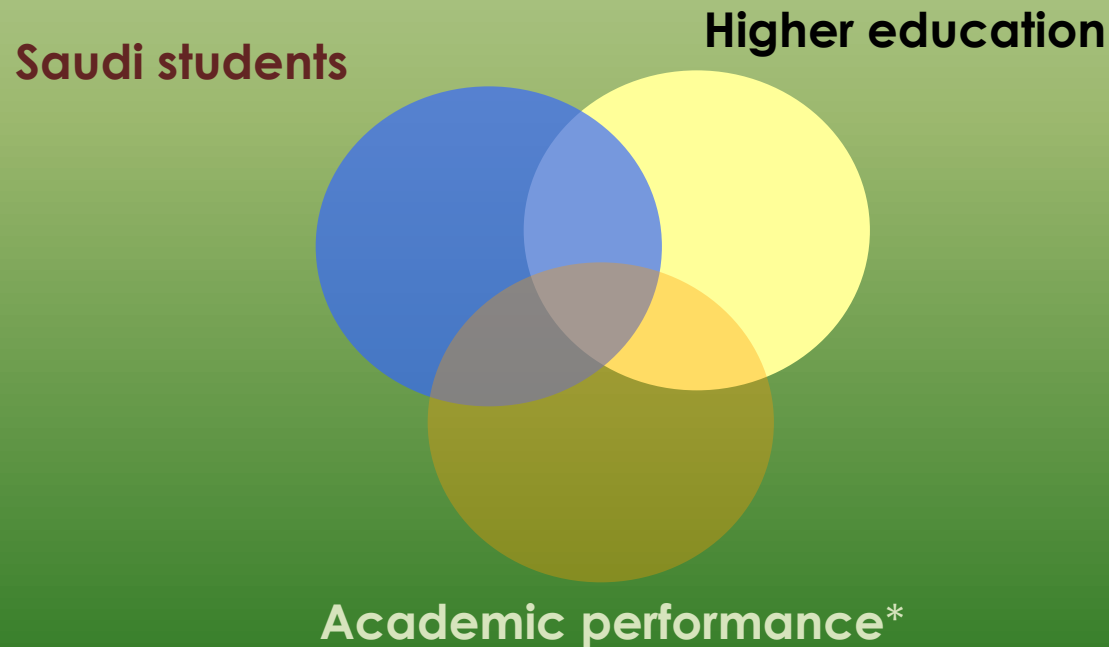
Why Do a Literature Review?

- Find out what others did and avoid duplication of efforts.
- Learn from achievements/failures of other engineers.
- Better identify and estimate the risk in achieving the tasks.
- Highlight gaps and under-researched areas.
- Find ideas about approaches and methods which had not occurred to you.
- Learn how you might classify and present your own data*



Literature Review Model

- Example: you may be researching the academic performance of Saudi students in higher education



Where do you search?

- **Internet (Search Engines)**

Use keyword searches in Google Scholar:

<http://scholar.google.com/>

<http://google.com>,

- **Digital Libraries** (*you can download articles when on KSU network*)

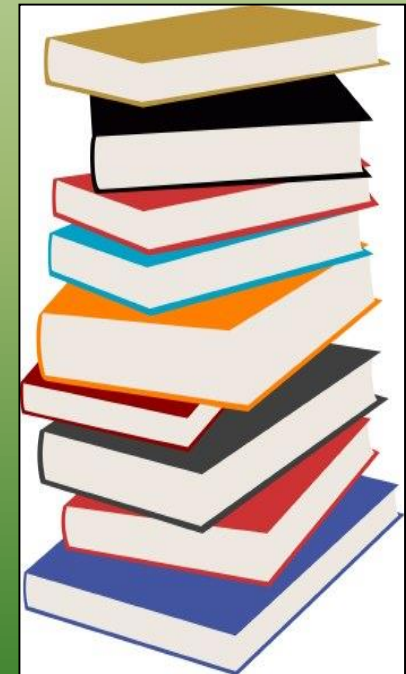
Need to use accurate keywords to identify relevant articles.

E.g. <http://www.sciencedirect.com/>

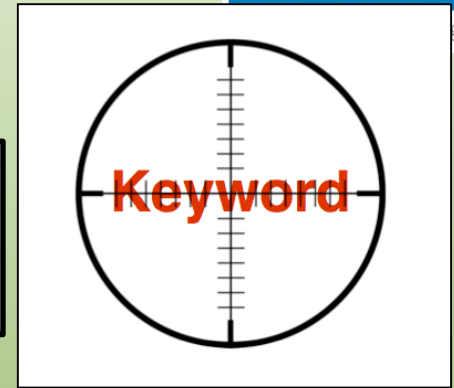
- **Libraries**

Look through the list of journals and browse the books on the shelves to find relevant ones

Ensure credibility of research materials when searching on the Web, some websites are not credible and the materials resident on the site have not been reviewed.



Basic Steps



1. Identify a coherent set of keywords concise and exhaustive.

Example:

(Saudi students **OR** Saudi education **OR** Saudi learning) **AND**
 (academic performance **OR** academic achievement)
AND
 (higher education **OR** colleges **OR** universities)

2. Search your sources for relevant publications (Identify search time-span*)

Basic Steps, Cont'd.

3. Compile and sort the collected material.
4. Extract a list of references
Refer to references whenever contents are used
 Include this list of references in your final document
5. Write your literature review*
6. Always acknowledge the source of information.
7. Do NOT copy word-for-word from a reference.



Adhere to ethical norms and avoid **plagiarism**; This issue will be looked at very seriously throughout the course

Group Activity: Project Planning Class Activity



- Create a work breakdown structure for your project and an initial Gantt Chart

Watch the following great video for ideas:

<https://youtu.be/ADK58IRPKh8> *

- Decide on the appropriate keywords for your projects' literature review



College of Engineering
GE106: Introduction to Engineering Design

Project Planning and Literature Review

By

Matthew Amao