Capstone design project preparation and execution

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Topics

1) Why project is planned?
2) What is the outcome of planning the project?
3) What is a project action plan?
4) How to prepare a graduation project action plan?
5) How to execute a graduation project ?
6) Concluding remark

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Project planning and outcomes

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1-a Why project is planned?

The project should be planned because it is a learning outcome. It provide the student with the understanding the project requirements, so that he will be able to:

- *Know the activities to be carried out, and estimated time of executing these activities,*
- *Monitor the progress of the project, and*
- *Make necessary corrective actions when needed without losing the project aims and time.*

1-b Why project is planned?

At start the students should carry out the following by mentor help;

1. Carry out a Project planning activity, to provide a work plan as Gantt chart
2. Explain how these activities would address the ABET requirements of incorporating engineering standards and realistic constraints (**economical, environmental, political, social, ethical, health and safety, manufacturability, sustainability)**

2- Project planning outcome

- Ability to **PLAN** project effectively using project planning techniques:
  - Planning and scheduling project work to manage the project.
  - Developing the design problem knowledge background and design procedures requirements
- Ability to **EXCUTE** project effectively using project control and monitoring techniques:
  - Control project scope and schedule
  - Monitor performance

Project action plan

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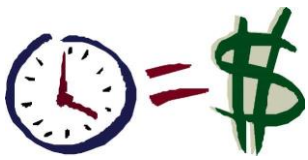
3-a What is an project action plan?

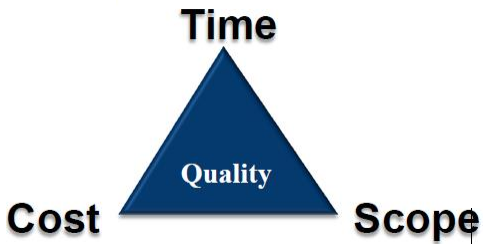
- Action plan is a sequence of steps that must be taken, or activities that must be performed well ,to achieve an project predefined objectives.
- An action plan has three major elements
  - Specific Tasks
  - Time Horizon
  - Resource Allocation



3-b what to be done for action plan?

- What must be done?
- Who will do it?
- How will it be done?
- When must it be done?
- How much effort it will take?
- What do we need to do it?

3-c What factors affect Project plan?



- Triple Constraint

  Change in one constraint impacts at least one of the other constraints — and may also impact stakeholder satisfaction

Increased Scope	**= increased time + increased cost**
Tight Time	**= increased costs + reduced scope**
Tight Budget	**= increased time + reduced scope**

3d- What is the Scope?

- Product Scope

  Features & functions that characterize a product, service or result

- Project Scope

  Work that needs to be accomplished to deliver a product, service or result with the specified features and function

3e- How you define scope?

- Collect Requirements

  Meeting with your supervisor and maybe the examiner

- Define the Scope

  Based on the scope the deliverables can be accurately defined

- Create Work Breakdown Structure

  Deliverable-oriented hierarchy of decomposed work to be done by the project team – Decomposition into tasks

preparation project action plan

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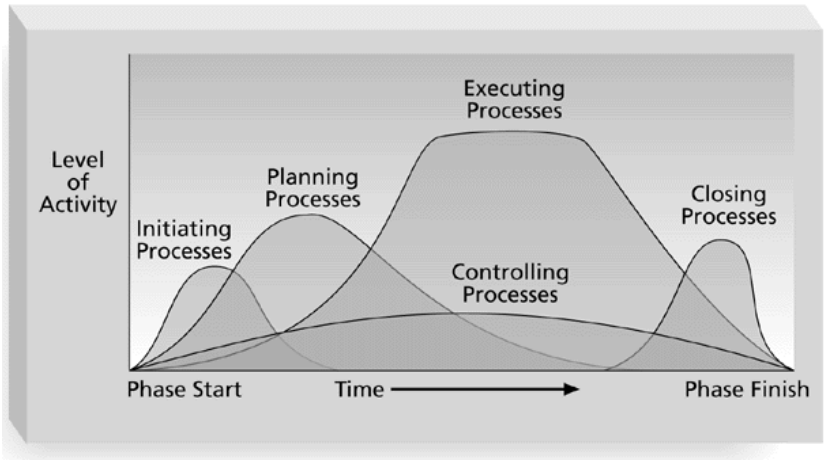
4- How to prepare a graduation project action plan?

The project should be prepared on the following bases:

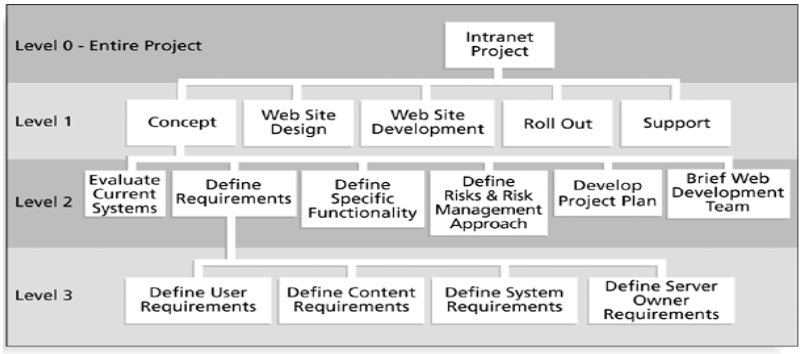
- *Required activities (Work structure)*
- *Activities Time duration*
- *Resource Allocated*
- *Time of completion*

4a- Project Cycle

A project is achieved over time by has phases containing several processes.



4b- WBS



4c- Project Schedule

- Develop Schedule is the process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule.
- Determine planned start & finish dates for all project activities

4d- Project Schedule

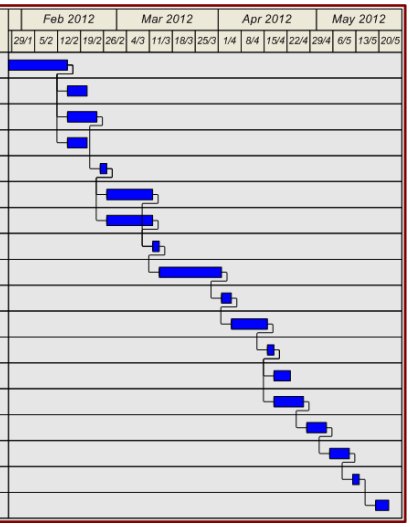
Security and Access Control System

Created Using Milestones Software
www.kidasa.com

P-R-O-J-E-C-T	2000			2001									R-E-S-P
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
ENGINEERING													ENGINEERING
Site Survey	18	15											Marwell Engineering
Draft Survey Results	18	4											Marwell Engineering
GMBH Review		4	29										Lost Creek Point Mgmt
Survey RPT (Final)			1	22									Electrical Contractor
GMBH RFV Approval			3	6									Lost Creek Point Mgmt
System Design				14	20								Marwell Engineering
HMBC Review					20	4							Electrical Contractor
Bid and Award						4	4						Marwell Engineering
Construction Support							27	5					Marwell Engineering
CONSTRUCTION													CONSTRUCTION
Buy Cable Conduit							24	16					Electrical Contractor
Install Cable							2	7					Electrical Contractor
Procure Hardware							24	21					A.&J Security
Install Hardware								21	20				A.&J Security
Deliver Console								9	11				A.&J Security
Load Data									13	11			Lost Creek Point Mgmt.
Configure Software									1	26			A.&J Security

4e- Project Schedule

ID	Task Name	Start	Finish	Duration
1	0.0 Kickoff (select a product)	1/28/2012	2/14/2012	16d
2	1.1 Product discription	2/15/2012	2/20/2012	5d
3	1.2 Existing Product design	2/15/2012	2/23/2012	8d
4	1.3 Project product development Plan	2/15/2012	2/20/2012	5d
5	Reporting (1)	2/25/2012	2/26/2012	2d
6	2.1 Product Needs and specifications	2/27/2012	3/11/2012	12d
7	2.2 Product Function Analysis	2/27/2012	3/11/2012	12d
8	Reporting (2)	3/12/2012	3/13/2012	2d
9	3.1 Concept Generation	3/14/2012	4/1/2012	16d
10	3.2 Concept selection	4/2/2012	4/4/2012	3d
11	3.3 Concept testing	4/5/2012	4/15/2012	9d
12	Reporting (3)	4/16/2012	4/17/2012	2d
13	4.1 Product design assessment	4/18/2012	4/22/2012	4d
14	4.2 Final developed product Design	4/18/2012	4/26/2012	8d
15	4.3 DFM Process development	4/28/2012	5/3/2012	6d
16	4.4 plan a Prototype	5/5/2012	5/10/2012	6d
17	Reporting (4)	5/12/2012	5/13/2012	2d
18	Submission Project Report and Presentation	5/19/2012	5/22/2012	4d



4f- Allocate Project Resources

- Failure to consider resource allocation in scheduling always leads to a schedule that cannot be achieved
- Resources for the project include:
  - Equipment
  - Materials and supplies
  - Money
  - People
- Estimate activity duration:
  - Analogous estimating—This uses actual duration figures from similar activities.
  - Parametric estimating—This calculates duration estimates by multiplying the quantity of work by the productivity rate.
  - Three-point estimates—This uses three estimate values for each activity

4g- Who are the Project Stakeholders

- Individuals and organizations actively involved in the project, or with interests that may be positively or negatively affected as a result of the completion of the project:
  - Project team
  - Project supervisor
  - Project examiner
  - Other external stakeholders

Execution of the project

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5- How to execute a graduation project ?

5a- Project Executing

- It usually takes the most time and resources to perform project execution since the products of the project are produced here
- The most important output of execution is work results
- Project plan execution involves managing and performing the work described in the project plan

Don't confuse ACTIVITY with ACCOMPLISHMENT.

5b- Project Control and Monitor

No plan, no control !

Controlling involves measuring progress toward project objectives, monitoring deviation from the plan, and taking corrective actions

- Are we on target?
- If not, what must be done?
- Should the plan be changed?

5c- Project Conflict Management

- **Forcing** (Win/lose) - one person forces solution on the other parties
- **Smoothing** (accommodating) (lose/lose) - attempts are made to make conflict appear less important than it is
- **Compromise** (negotiating) (neutral/neutral) - each party gives up something to reach a solution
- **Withdrawal** (avoiding) (lose/lose) - one party gives up & refuses to discuss the conflict, which is probably the worst technique
- **Confrontation** (collaboration/problem solving) (win/win) - the only true and best solution -a fact finding mission results in some possible solutions which are chosen from

Conclusion

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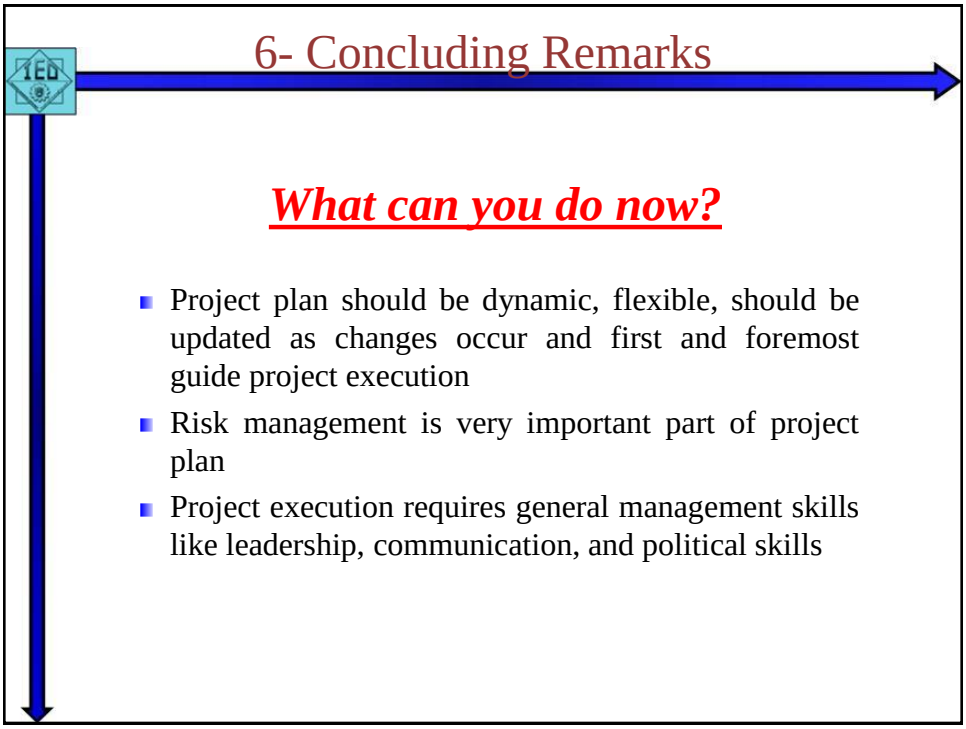
6- Concluding Remarks
What can you do now?
Project plan should be dynamic, flexible, should be updated as changes occur and first and foremost guide project execution
Risk management is very important part of project plan
Project execution requires general management skills like leadership, communication, and political skills