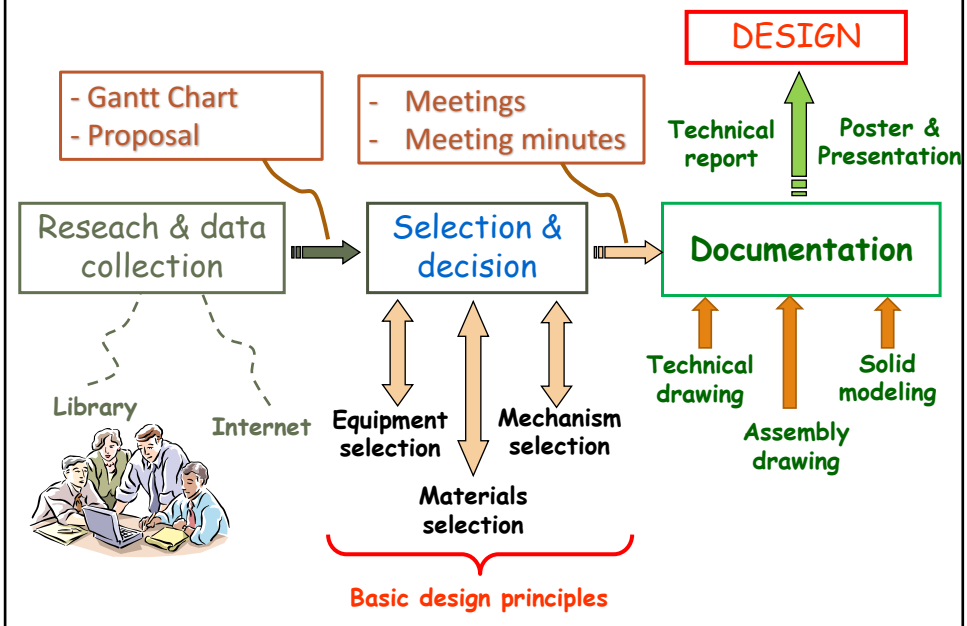
Design Project

RES 112E

COMPUTER AIDED TECHNICAL DRAWING



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http://transport.itu.edu.tr/dersler/lisansdersleri/res112e/desingproject

The team approach

An effectively organized team

Management of talent becomes as much as of the process as solving the problems

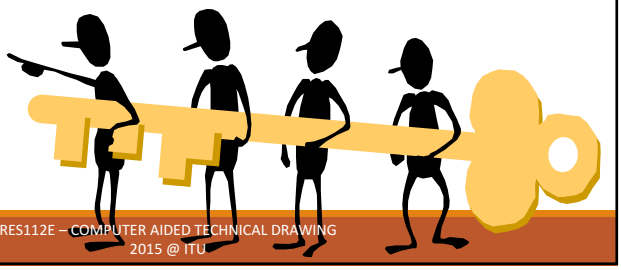
Each team has a **NAME**

Team size

Student design teams should have from 4 to 8 members.

4 is the minimum number needed for a valid team experince

6 is the number needed to minimize the possibility of domination by one or two members



Team composition

In practice, an engineering team often consists of representatives of different departments or even different firms who may be unacquained.

This situation can be advantageous beacuse it reduces the impact of preconceived notions about indivuduals.

Team composition

Not allowed one group members from
All **Manuf.Eng.** undergrads and/or
All **Mech.Eng.** undergrads and/or
All **girls** and/or
All **transfer students, DMPs, minors, ERASMUS, foreigners** and/or
All **repeat** undergrads

Team leader

A leader is necessary for teams to function effectively.

The leader is responsible for making assignments, ensuring that deadlines are met, and mediating disagreements.

Proposal

A proposal identifying the problem and outlining an approach for solving it

Worksheets documenting the preliminary ideas for a solution

Schematic diagrams, flowcharts, or other graphics to illustrate refinements of the design

A market survey evaluating the product's possible acceptance and estimated profit.

For more details please see Design Proposal

Problem specifications

Comprehensive problems

40 to 100 work hours

A team may be expected to complete all of the following tasks

Problem specifications

A model or prototype for analysis and/or presentation

Pictorials illustrate features of the final design solution.

Dimensioned working drawings and assembly drawings to give details and specifications

Two progress reports and a final report (written and oral reports), illustrated with graphics and diagrams, to explain the method of solution and present conclusions, and recomendations.

Scheduling team activities

The semester schedule is suggested for a comprehensive design project.

Spreading design projects over the semester allows time for thinking about the problem, gathering information, and working on the solution.

Refer to the exercise bench example in Chapters 2-8 pages 6 - 85 in Reference [2] as a guide for carrying out your project.

During the first course week

- The design team will be formed by **4 or 6** members.
- One of the team members will be selected as a **team leader**.
- The team **activity schedule** will be prepared.
- The course instructor will be informed about your team, the leader, and the team activity schedule.
- Otherwise, **the design teams will be organized by the course instructor.**

7th course week

Progress report #1 will be submitted and presented by each team

11th course week

Progress report #2 will be submitted and presented by each team

14th course week

Final design project will be submitted and presented during the last course

Grading system

Progress report #1	**: 15 %**
Progress report #2	**: 15 %**
Documentation (Final report)	**: 25 %**
Oral Presentation	**: 30 %**
Poster Presentation	**: 15 %**

Time planning tool **Gantt Chart**

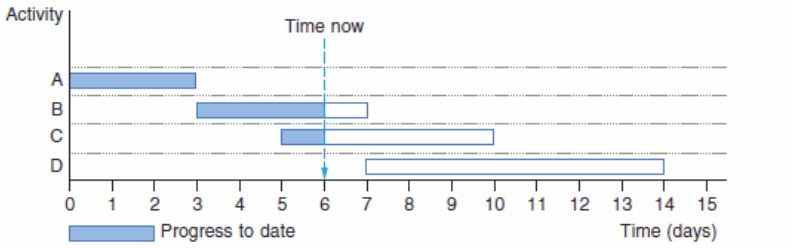
Bar chart shows the relationship of activities over a period of time

Activities listed down the page whilst time runs along the horizontal axis

Standard symbols used to denote the activities and progress

Symbol	Meaning
[	Start of an activity
]	End of an activity
[——]	Actual progress of an activity
▭▭	(alternative representation)
V	Time now

For Gantt Chart details please see Gantt Chart



Activity	Days									
	1	2	3	4	5	6	7	8	9	10
Draft spec. and budget	[—]									
Specify materials/parts		[—]								
Design cross-over			[—]							
Construct cross-over				[—]						
Design enclosure			[—]							
Build enclosure				[—]		]				
Order/await drivers			[—]				]			
Assemble components							[—]	]		
Test								[—]	]	

Engineering Design Process

Define problem	Gather information	Concept generation
Problem statement	Internet search	Brainstorming
Benchmarking	Patents	Decomposition
Project planning	Standards & Codes	Concept design
	Trade literature	

Product design	Configuraton design	Detail design
Components	Materials selection	Assembly model
Standard elements	Manufacturing	Solid model of parts
Power source	Cost evaluation	Blueprints
		File preparation
		Presentation

For details : **Engineering design : a materials and processing approach / George E. Dieter**
MECHANICAL ENG.F. LIBRARY TA174 .D54 1991

Communicationg the design

Meeting minutes

Writing the technical report

Presentations

For details : **Engineering design : a materials and processing approach / George E. Dieter**
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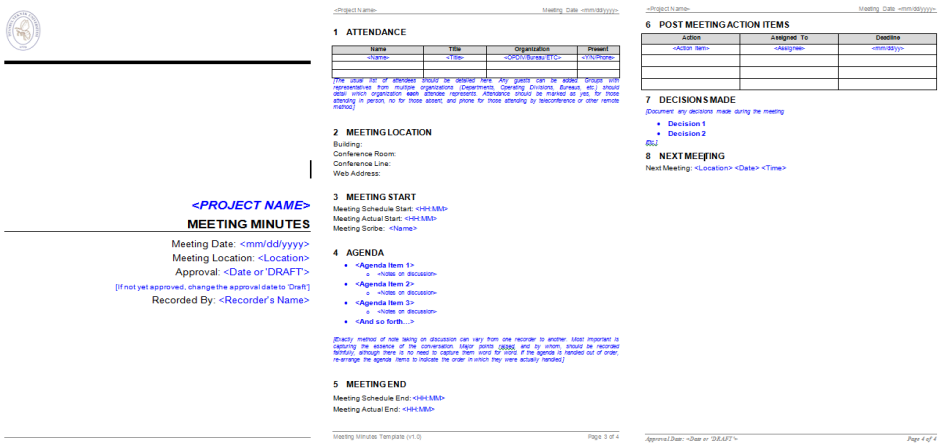
Meeting Minutes



<PROJECT NAME>
MEETING MINUTES

Meeting Date: <mm/dd/yyyy>
Meeting Location: <Location>
Approval: <Date or 'DRAFT'>
[If not yet approved, change the approval date to 'Draft']
Recorded By: <Recorder's Name>

1 ATTENDANCE

Name	Title	Organization	Present
<Name>	<Title>	<OPDIV/Bureau/ETC>	<Y/N/Phone>

The usual list of attendees should be detailed here. Any guests can be added. Groups and representatives from multiple organizations (Departments, Operating Divisions, Bureaus, etc.) should detail which organization each attendee represents. Attendance should be marked as yes, for those attending in person, no for those absent, and phone for those attending by teleconference or other remote method.]

2 MEETING LOCATION
Building:
Conference Room:
Conference Line:
Web Address:

3 MEETING START
Meeting Schedule Start: <HH:MM>
Meeting Actual Start: <HH:MM>
Meeting Scribe: <Name>

4 AGENDA
- **<Agenda Item 1>**
  - <Notes on discussion>
- **<Agenda Item 2>**
  - <Notes on discussion>
- **<Agenda Item 3>**
  - <Notes on discussion>
- **<And so forth…>**

[Exactly method of note taking on discussion can vary from one recorder to another. Most important is capturing the essence of the conversation. Major points raised, and by whom, should be recorded faithfully; although there is no need to capture them word for word. If the agenda is handled out of order, re-arrange the agenda items to indicate the order in which they were actually handled.]

5 MEETING END
Meeting Schedule End: <HH:MM>
Meeting Actual End: <HH:MM>

Meeting Minutes Template (v1.0) Page 3 of 4

6 POST MEETING ACTION ITEMS

Action	Assigned To	Deadline
<Action Item>	<Assignee>	<mm/dd/yyyy>

7 DECISIONS MADE
[Document any decisions made during the meeting
- **Decision 1**
- **Decision 2**

Etc.]

8 NEXT MEETING
Next Meeting: <Location> <Date> <Time>

Approval Date: <Date or 'DRAFT'> *Page 4 of 4*

For more details please see Team Meetings

Meeting MinutesTemplate *.doc file

Final Report

The most comprehensive type of reports are final reports that summarizes the completion of the project. Typically, they contain the following sections

1. Project identification
2. Method and approach
3. Body
4. Findings and solution
5. Conclusions and recommendations

For Final Report Outline please see Final Report Outline

Posters

Each group has one **A2** size poster

Photographs, charts, and figures should have clear details, be labeled clearly

Your poster can be printed on a single piece of paper by using a color plotter

The net size of your poster can typically be up to **H = 625 mm** by **W = 450 mm**.

For more details please see Poster Presentations

The development & organization of poster

Title of the presentation is limited to **100 pt** tall letters.

Full names of team and members are to be **50 pt** tall letters. This heading (title, author(s), and affiliation(s), logo(s) and any acknowledgments should take up an area no more than **20 cm** high, and appear at the top of the poster. The smallest font size should be at least **24 pt** to ensure readability at a distance of **1 to 2 meter**. Typically Arial or Times New Roman fonts are the easiest to read at a distance. Keep text in short, concise, legible statements.

Design parameters

Key parts of procedures and methods

Design

Oral Presentation

A good presentation prepared in Microsoft PowerPoint is strongly expected. All group members are required to participate during the presentation.

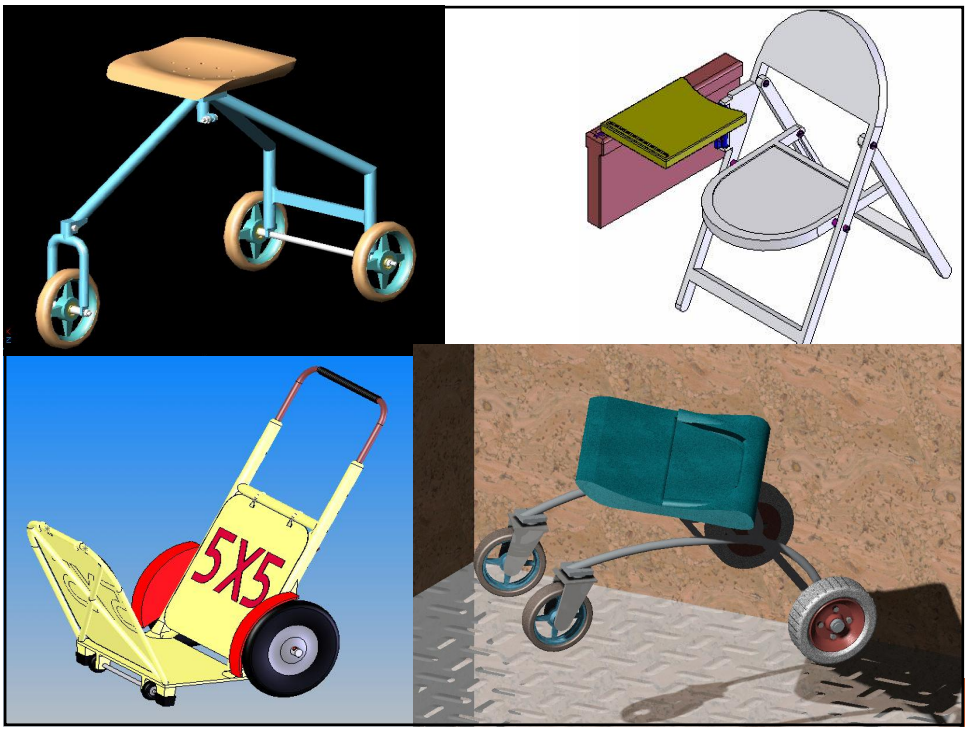
Each group member must participate in the final project presentation.

Presentations will be limited to **15 minutes**. Therefore, your presentation should focus on the critical parts of your work without dwelling into the details (already present) in your final report.

For more details please see Oral Presentations

Preparing the presentation

1 – Project title
2 – Background/need and overview of the project
3 – Project aims and objectives (what you hope to achieve)
4 – How you went about meeting your aims/achieving your solution (implementing)
5 – Your achievements (solution/deliverable, what you finally achieved)
6 – Strengths and weakness of your achievement
7 – Recommendations/Conclusions/Further work
8 – Summary
9 – Any questions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