

# Mechanical Analysis and Design

## ME 2104

---

## Lecture 2

# Team forming and Management of Documents

Prof Ahmed Kovacevic

Department of Mechanical Engineering and Aeronautics  
Room CG25, Phone: 8780, E-Mail: [a.kovacevic@city.ac.uk](mailto:a.kovacevic@city.ac.uk)  
[www.staff.city.ac.uk/~ra600/intro.htm](http://www.staff.city.ac.uk/~ra600/intro.htm)

# Goals for this week

---

- Personality Preferences?
- Lecture in three parts:
  - » Working in teams and documents
  - » Forming teams (Mo & Amir)
  - » Intro to project management (WBS)
- Each team to meet later this week
  - » Personality preference of 3 of your team mates
  - » Draft Working agreement
  - » Draft WBS – team roles ...

# Working in teams

---

- Stages in Team Development
- Team Member Responsibilities
- Team Leadership Structures

# Team Development Stages

---



**COLLABORATING**

**ACCEPTING**

**CHALLENGING**

**FORMING**

# Team Development Stages

**COLLABORATING**

**ACCEPTING**

**CHALLENGING**

**FORMING**

Common behaviors

- politeness
- uncertainty
- attempting to define tasks
- determining acceptable behavior
- deciding where to begin
- diving into solutions
- depending on single individual

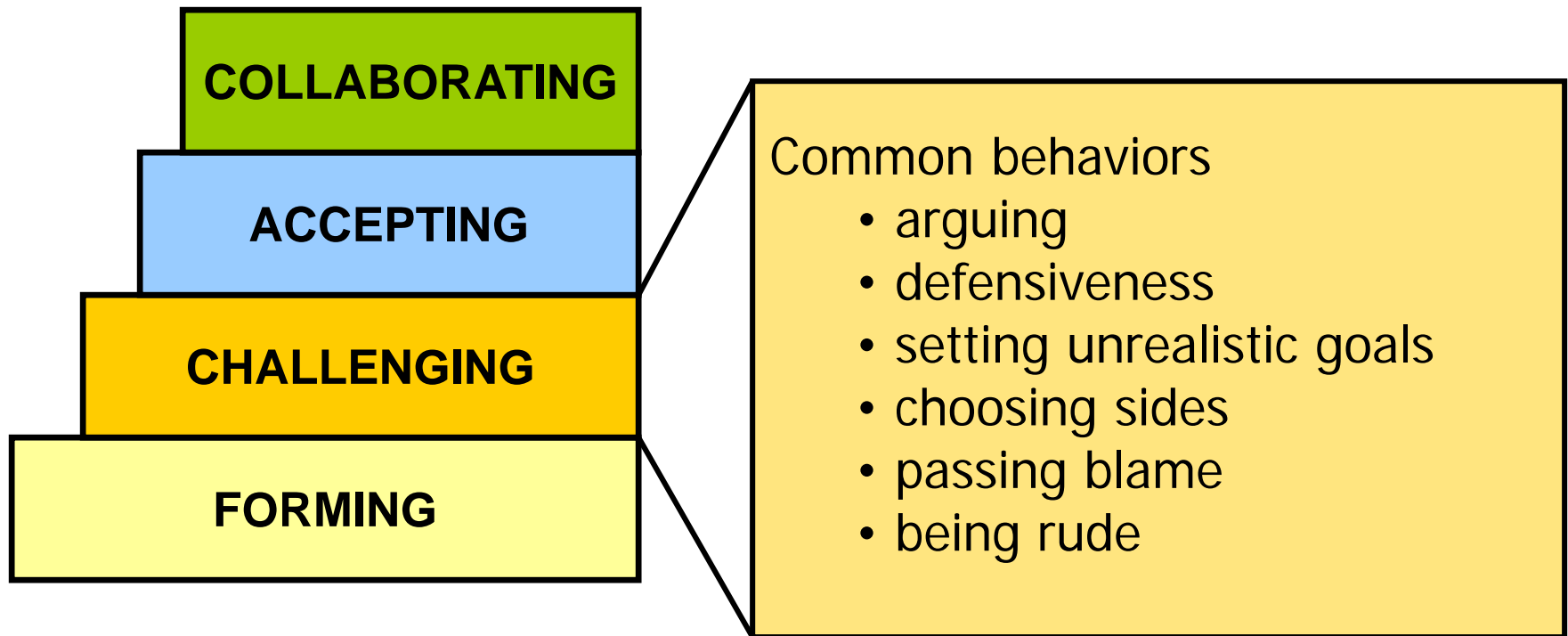
# Effective Team Behaviors:

## *FORMING STAGE*

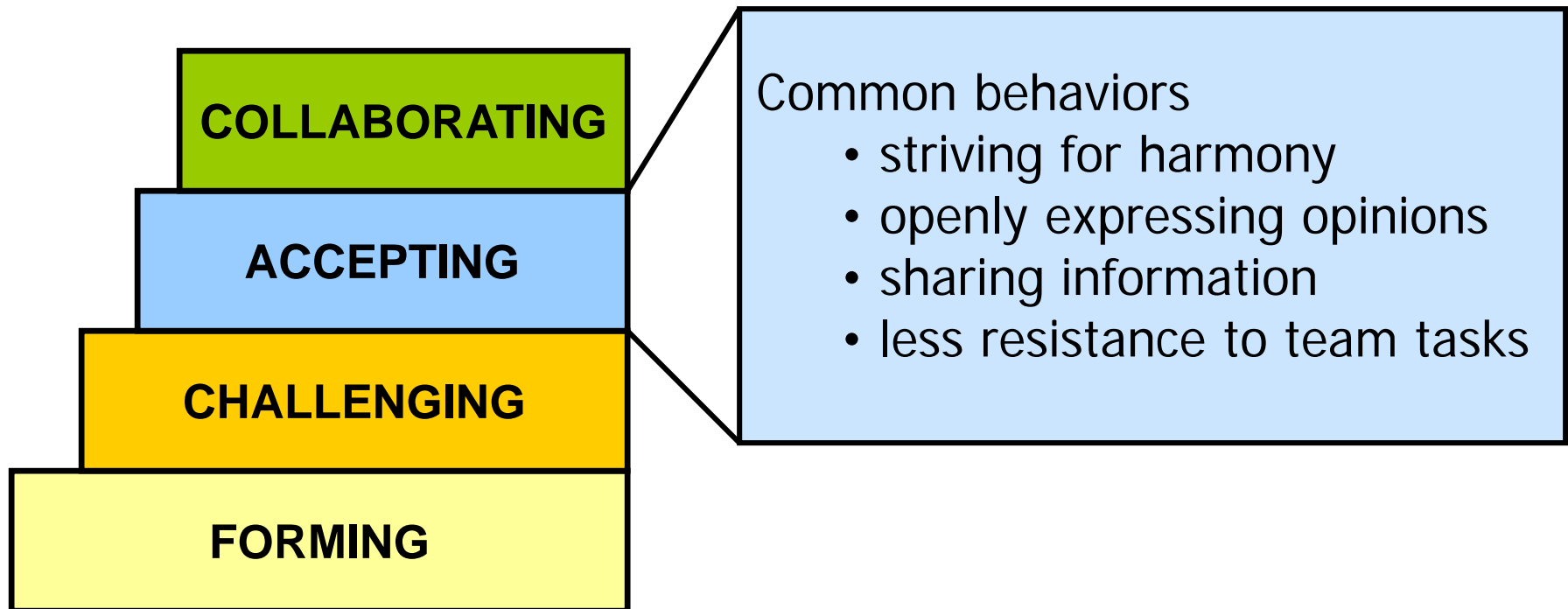
---

- Active listening
- Solicit input from ALL team members
- Avoid rushing to conclusions
- Acknowledge and value input from others
- Spend time establishing direction and priorities

# Team Development Stages

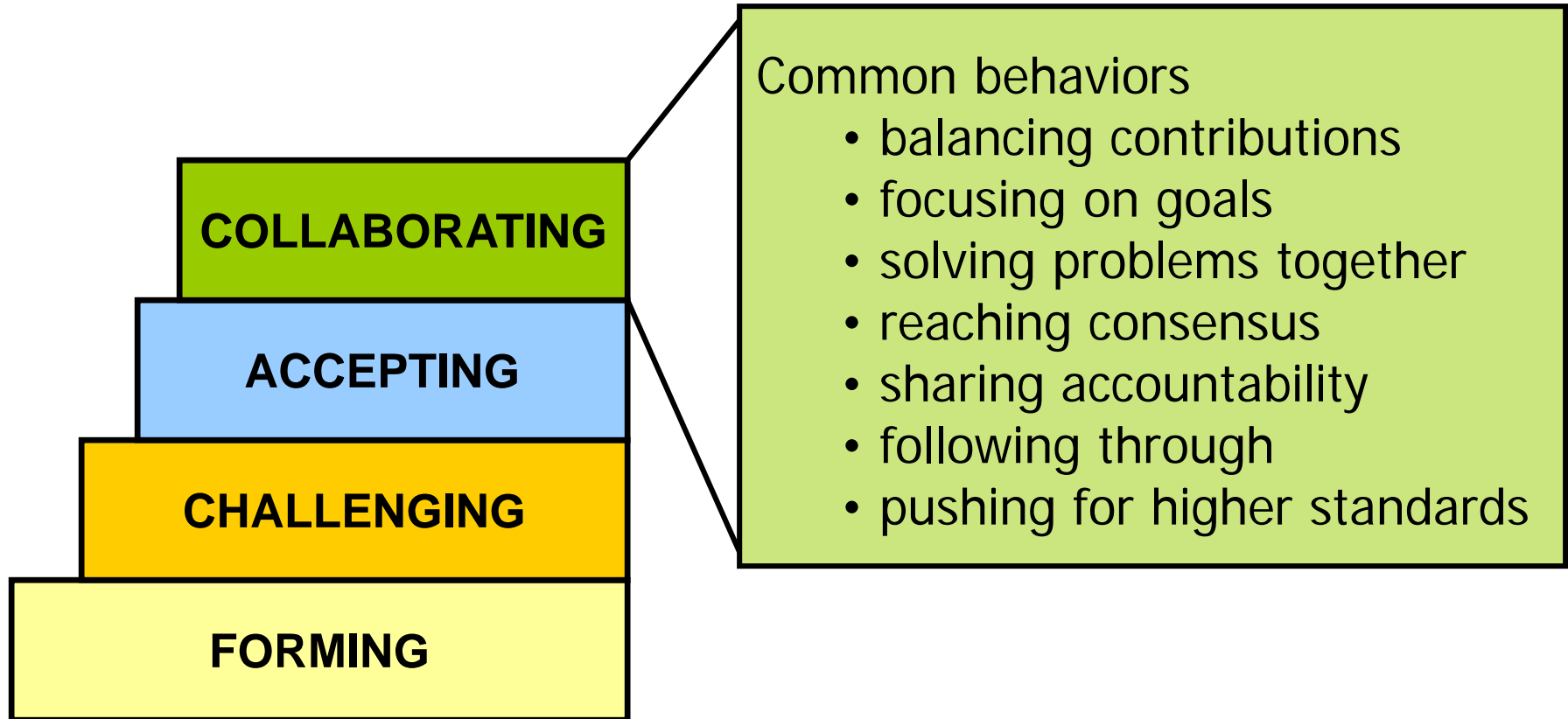


# Team Development Stages





# Team Development Stages



# Managing Conflict

---

*Does your team avoids conflicts?*

- Does your team accepts solutions without discussing proposals and consequences?
- Do you leave team meetings without understanding what is to be done and why?
- Does your team keeps having to deal with the same problems?

# Is your team too quick to accommodate?

---

- Do you (or others) present a position and then quickly back down?
- Are you (or others) uncomfortable saying what you really think or feel?
- Does one person dominate discussion and planning?

# Is your team in a fighting mode?

---

- Do you blame others when things do not go as planned?
- Does your team have a clique that sticks together on decisions?
- Do team members interrupt or talk over others?

# Signs of Productive Collaboration

---

- Team members communicate openly
- Team members listen actively
- All alternatives are explored
- Everyone understands what's going on and agrees on the next step
- The focus is on finding the best solution rather than on where the ideas come from

# Groupthink...

---

*...occurs when a team spends too much energy maintaining cohesiveness instead of openly evaluating facts*

- Groupthink can lead to bad decisions, since team members are responding to pressures **aside from** making the best use of their talents to solve the problem.

# Team Members Role:

---

- Each member of a team has a specific role to play and must fulfill his/her role in order to make the team successful...

**SO...**

Select a role and fill it to  
the best of your ability!

# Team Member Roles:

---

- Team Leader
- Team Member
- Recorder (AKA Team Scribe)
- Treasurer
- Design Engineer
- CAD Technician

*Just to name a few!*



# Team Leader Responsibilities:

---

- Track team's goals and achievements
- Communicate team's progress and needs to both the team and management (instructor)
- Remove barriers in team progression
- Take care of logistics (arrange for meeting rooms, time, group supplies)
- Run all meetings
- Help to resolve conflict

*When in charge, take charge!*

# Recorder (Scribe) Responsibilities:

---

- Take meeting minutes
- Maintain Design Notebook  
(will be discussed)
- Maintain copies of all pertinent paperwork
- Assist Team Leader as needed
- Paperwork, paperwork, paperwork!

# Treasurer Responsibilities:

---

- Handle all financial issues
  - » Receive check
  - » Cash check
  - » Maintain funds
- Keep team leader informed of financial status
- Keep team members informed of financial status
- Maintain all receipts for purchases of materials, supplies, etc.

# Team Member Responsibilities:

---

- Focus on the purpose of the team
- Focus on team goals vs. personal goals
- Work to develop an atmosphere of trust and respect
- Listen more than you talk
- Communicate clearly
- Participate fully
- Make realistic commitments and keep them
- Respect (not necessarily like) your fellow team members

# Team Member Responsibilities:

---

- Be open to others' ideas
- Give others your full attention
- Actively listen
- Don't get mad if the team doesn't use your idea
- If you have an idea, be able to support that idea
- Criticize constructively
- Accept constructive criticism

Remember:

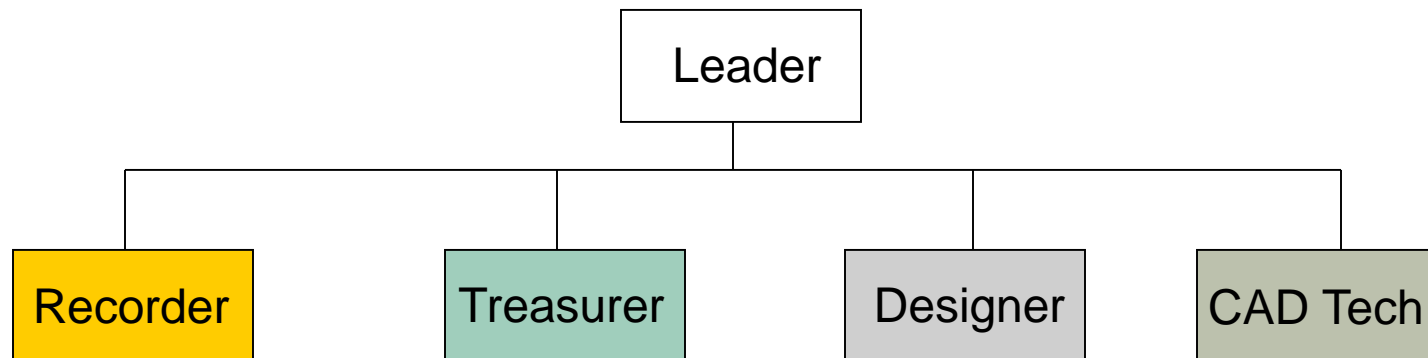
Team Leaders, Records, Treasurers, etc.  
are all Team Members as well!

# Team Leadership Structures

## (AKA Organizational Charts)

Organizational charts are as diverse as the individual teams who use them.

Example: Traditional Organizational Structure

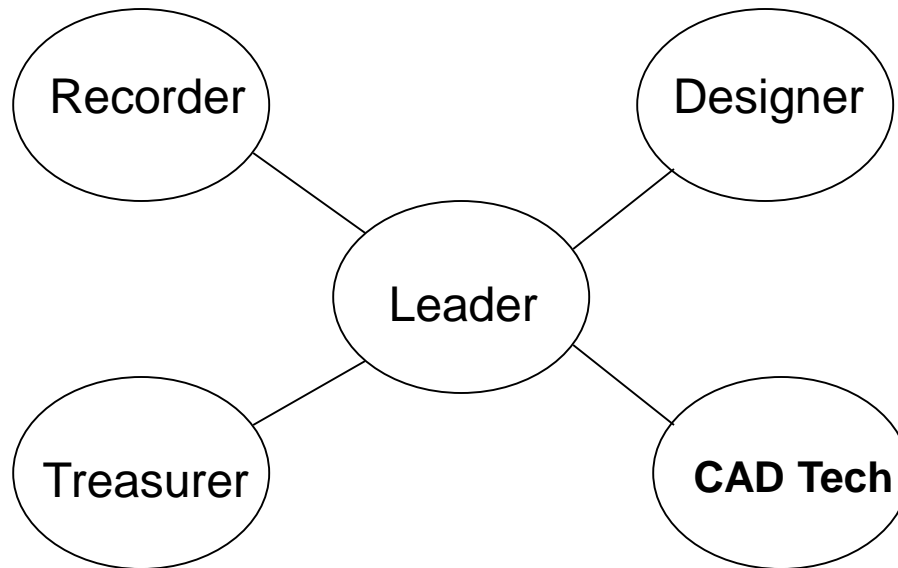


Implies a strong leader who is over, and directs, team action.

# Team Leadership Structures

## (AKA Organizational Charts)

Example: Flat, Participative, Spoke Structure

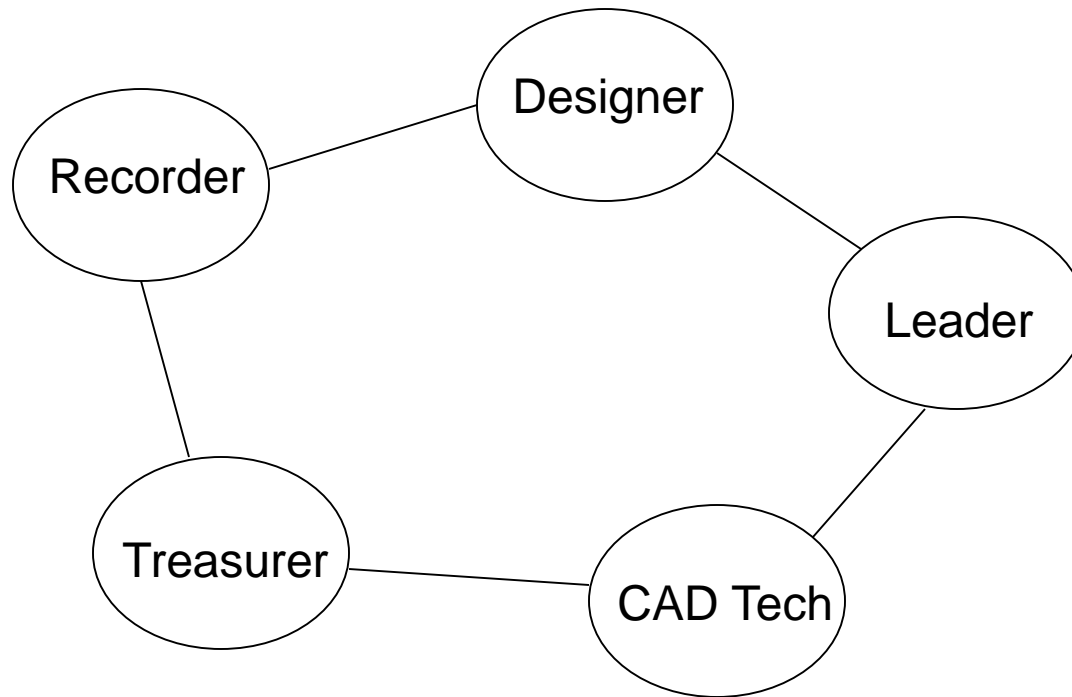


**You** will develop a team organization chart in the near future!

Implies accountability and participation of leader;  
short, direct communication paths; team inter-dependence.

# Team Leadership Structures (AKA Organizational Charts)

Example: Flat, Circular Structure



Emphasizes leader as a team member; leadership function can shift around the ring as situations demand.



# Team documents and meetings

---

- Design notebook
  - » Team working agreement
  - » Meeting agendas and minutes
  - » Design memos
- Planning and conducting meetings

# Design Notebook

---

- Used for documentation of project
- Example items for Design Notebook
  - » Disk with all information
  - » Copies of all pertinent information
  - » Meeting agendas
  - » Meeting minutes
  - » Team working agreement

# Team Working Agreement (Team Ground Rules)

---

- Referring to the agreement made at the formation of a team
- All members of the team should sign and date the agreement
- Keep this agreement in your Design Notebook with your graded work and other materials
- Expand your working agreement later if the need arises

# Examples of Ground Rules

---

- How decisions will be made  
(i.e. majority, consensus, team leader, etc.)
- Attendance at team activities  
(meetings, regular schedule class periods, etc.)
- How work will be divided
- Consequences of failed actions

# Example Team Working Agreement

## **Team Working Agreement** *Squished Frog Industries*

- Members will show up for team meetings
- Members will check e-mail regularly
- Work will be divided fairly
- ...

Signature/Date: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Meeting Agenda Items

---

- Items to be discussed
- Person or people leading the discussion for each item
- Desired outcome of each item
  - » List of ideas or options
  - » Shared understanding
  - » Priorities
  - » Decision or recommendation
  - » Action Steps
- Estimated time for each item
- Meeting Evaluation

# Design Memos

- Memos (memorandums) are one of the primary means of communication between employees and supervisors
- Two primary reasons to develop good memo writing skills:
  1. Communicate information clearly and logically
    - Have clearly written sentences
    - Avoid features that detract from the content (e.g., misspellings, incorrect grammar, rambling statements...)
  2. Present a positive impression of yourself and your abilities
    - This may be the only “meeting” with you that your reader has
- Format of an appropriate design memo is next...

Logo



Department of Basic Engineering

Robert B. Stone, Ph.D., Associate Prof.  
102A Basic Engineering Building  
Rolla, MO 65409-0210  
Telephone: (573) 341-4086  
e-mail: rstone@umr.edu

Letterhead

26-January-2004

Date written or distributed

Memo header

MEMO TO: BE 20 Teams  
FROM: Dr. Rob Stone *Robert Stone*  
RE: Memo writing formatting issues

Body

This memo addresses some formatting issues that are prevalent in BE20 team memos. Please adhere to the following memo preparation guidelines (in addition to the memo writing document posted on the BE20 website). **Future memos that do not follow the guidelines will not be graded.**

1. Single space the body text of the memo.
2. Include your team logo and name on every memo.
3. Ensure your memos have a professional look to them. This includes the attachments. In general, any figures or tables should be generated by a computer application. In some cases, such as the concept variants memo, hand drawings are acceptable. However, any hand drawing *must* be neat and legible.
4. Be sure to reference all figures and/or tables attached with the memo in the text of the memo. Label all figures/tables as "Figure #" or "Table #" with a descriptive caption. For example, see the caption for Fig. 1 below. Additionally, all figures and tables should be referenced from the text of the memo in *ascending* order, e.g., Fig. 1 should be referenced prior to Fig. 2.



Copyright, © 2002 United Feature Syndicate, Inc.

Figure 1. Sample figure with a descriptive caption.

5. Any additional information necessary to support the memo should be included as an attachment and listed at the end of the memo under the Attachments heading. Be sure to reference the attachment from the memo body. For example, the drawing of a self-propelled vehicle from a previous semester project is attached.

Attachments: Self-propelled vehicle drawing

Figure or Table

Figure or Table caption

Attachments heading

Figure or Table call out in body



# Memo Header

- Contents of memo header should be aligned on the left – except for the date, which may be centered
  - » **TO:** The individual from whom you expect a response or to whom you are providing information
    - In some limited number of cases, there may be more than one addressee, however, in most cases of multiple addressees a committee or group name is appropriate
  - » **FROM:** Your name or your team name if the memo was produced as a team
    - Identifies to whom the addressee and others should respond.
  - » **RE:** A condensed title that describes the main thrust of the memo
  - » **CC:** Optional field to include the names of others who will receive a copy of the memo
    - Cc: persons are not expected to respond directly to the memo

# Memo Body Parts

- The body of the memo should contain the following components:
  - » **Introduction**
    - An introductory paragraph that tells the recipient why you are sending this document
  - » **Body**
    - Bulk of your effort in making a point, providing information, answering a question, or doing whatever caused you to write the memo in the first place
    - Place references to all included **tables, figures, appendices or attachments** in order to direct the reader's attention
  - » **Closing**
    - May take several forms depending on the purpose of the memo, such as including a “thank you” if appropriate, requesting or suggesting specific actions or responses, or suggesting additional sources of information.

# Figures and Tables

- Figures and tables can be incorporated into the memo body if desired, or included as attachments
- Reference each figure and table from the body text when you want to direct the reader's attention to the figure or table (Same applies for appendices, attachments - more on next slide)
  - » Reference as Fig. 1, Table 1, Appendix A or Attachment A
  - » Each figure, table, appendix or attachment must be referenced from the text!
- Label and caption each figure and table
  - » E.g., Figure 1. The engineering design process followed.
  - » E.g., Table 1. Customer needs list for project A.

# Supporting Documents

- **Appendices**

- » Attached to memos if they provide additional or supporting information which may be important to the reader
- » Generally they contain supporting data or information which is not critical enough to be required in the body of the memo, but which may be required for the reader to verify to be convinced of the information provided
  - Examples might be spreadsheet details, graphs of data, etc.

- **Attachments**

- » Supporting documents, perhaps written by others, which provide additional information pertinent to the point of the memo

# Team Meeting Process (5-Steps)

---

- Plan
- Start
- Conduct
- Close
- Follow-Up

# Phase 1: Planning

---

- Clarify meeting purpose and outcomes
- Identify meeting participants
- Select methods to meet purpose
- Develop and distribute agendas
- Reserve and set-up meeting room

# Phase 2: Starting the Meeting

---

- Take roll
- Review agenda
- Set or review necessary ground rules
- Clarify initial questions

Recorder/Scribe should record all information to include date, time and team members present

# Phase 3: Conducting the Meeting

---

- Follow the agenda
- Cover one item at a time
- Control discussion
- Maintain focus and pace

Team Leader (or the designated leader) is in charge of conducting the meeting



# Phase 4: Closing the Meeting

---

- Summarize decisions
- Review action items
- Solicit agenda items for next meeting
- Review time and place for next meeting
- Evaluate the meeting and discuss ways to make better
- Thank participants

# Phase 5: Follow-Up

---

- Distribute or post meeting minutes promptly
- File agendas, notes and other documents in Design Notebook
- Do assignments

# Team Leader Role at Meeting

---

- Open the meeting
- Review agenda and make changes as needed
- Have recorder/scribe track notes and time
- Facilitate discussions
- Guide team
- Lead meeting evaluation
- Gather ideas for next meeting
- Close the meeting