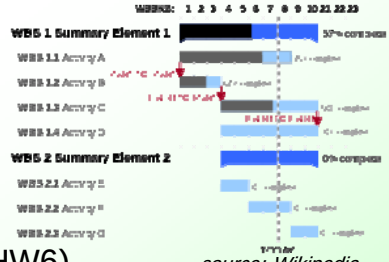
"Professional Skills"

- Professional Skills = non-technical skills useful in your career. E.g., technical writing, public speaking, project management, and more
- Resources
  - Mason's website for writing and presenting tips
    - http://www.egr.msu.edu/~mason/writing.htm
      - my tips and many links to other resources
- Outline
  - Project Planning
  - Plagiarism
  - Presentations
    - Dos and Don'ts
    - Presentation Organization
    - Slide Organization
  - Technical Writing
    - General Dos and Don'ts
    - Paper Organization
    - Introduction Sections
    - References
    - Common Mistakes
  - Tricky English

Project Management

- Planning and Communication are key
- Project Management Plan
  - clearly assign tasks to team members
  - ensure team knows WHO is responsible for WHAT and by WHEN
- Project Management Tools
  - GANNT Charts
    - Gantt charts illustrate start and finish dates of tasks of a project and sometimes show the dependency relationships between activities
  - 445 Design Project Task Schedule (due with HW6)
    - *WHAT* *WHO* *WHEN*



source: Wikipedia

Task	Assigned To	Week 1	Week 2	Week 3
Research				
<task 1>				
<task 2>				
Business				
<task…>				
Prototype				
<task…>				

be sure to include sufficient number of tasks to thoroughly define your project!

Plagiarism

- **Plagiarize**[1]:
  - to steal and pass off (the ideas or words of another) as one's own
  - use (another's production) without crediting the source
  - to commit literary theft
  - present as new and original an idea or product derived from an existing source

- **When should you consider potential plagiarism?**
  - professional paper?
  - conference presentation?
  - class report?
  - class presentation?
  - internal memo?
  - letter to a friend?

1. Merriam-Webster Online Dictionary, http://www.m-w.com/dictionary/

Plagiarism II

- **Things that are allowed**
  - come up with ideas/statements all on your own
  - quote another source, placing the statement in quotes and giving credit to the source using a proper reference citation
  - borrow a published idea/statement, work it in with your own ideas/thoughts and generate a new statement that is independent of the original work (in this case you do not need to reference it)
  - anything else is plagiarism
- **Things that are not allowed**
  - take statements, data, photos, etc. from any source without giving credit to the original source and including a full reference citation
    - this includes taking images off the web, even if they are open source
- **Open source info/figures from the web**
  - if you are SURE it is open source (no copyright) you CAN use it in your papers/reports, **but you still have to reference it**
  - open source means you can use it without paying copyright fees, but it does not mean you don't have to cite the source

Presentation: Dos and Don'ts

- Do
  - Relax!
    - it's a presentation, not a trial
  - Prepare
    - organize thoughts and slides to tell a good story
    - make sure your material matches the time limit
  - Practice
    - it will help you feel comfortable and relax
  - Try to "tell a story" rather than memorizing a speech
    - suggestion: memorize your introduction and conclusion but just "tell the story" for the rest of your presentation
  - Speak at a normal pace
    - when uncomfortable, most people speak too fast
  - Speak to the audience, not to the computer/screen

Presentation: Dos and Don'ts

- Don't
  - Worry or feel embarrassed.
    - audience is listening to you for a reason
    - audience is not out to get you!
  - Waste the audience's time
    - be prepared
  - Get stuck trying to describe a concept/design that is too complex for the time you have; simplify, show only key points
  - Overdo animation/highlighting; avoid overusing comic relief
    - it's a professional presentation not a circus
  - Make fun of your presentation or of yourself
  - Avoid "Umm"
    - when you are not sure what to say, just keep your mouth closed
  - Try to make up answers to questions you can't answer
    - describe relevant information that you do know
    - suggest meeting after presentation to discuss in more detail

Bullet Capitalization
- First word only
- All Major Words
- Not A mix of Both!

Presentation Organization

- Always consider the perspective of the audience
  - your job is to enlighten/teach/inform/motivate your audience
  - presentations are for the audience, not the speaker
  - make sure they can always follow you & engage them
  - don't waste their time: examples?
- Address the following issues for the audience

important stuff here!

  - Why should they care?
    - motivation for your work/presentation
      - the problem that is being addressed & value in addressing it
  - What is your approach?
    - typically, also highlight alternative approaches and show benefit of yours
  - What are your goals?
  - What did you do? (bulk of presentation)
    - step by step discussion of what you have done to solve the problem
  - What were your results?
    - results from your efforts
    - relevance/impact of these results

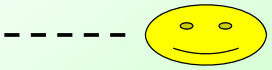
Slide Formatting

24 pt Arial
20 pt Arial
18 pt Arial
16 pt Arial
14 pt Arial

- Text
  - use minimal text; bullet-style comments
    - text is for 1) helping audience follow presentation or 2) reporting specific detail
  - keep text large enough to read
    - 14 pt font –probably as small as you should ever go
  - don't type everything you want to say into a slide
    - you can add speaker notes to each slide at the bottom in PowerPoint
  - use enough text to remind yourself of flow plan & show important data
- Figures
  - figures are more appealing to the audience than lots of text
  - good figures can replace a lot of text
  - avoid bad figures: hard to see/read or too complex for point you are trying to make
- Difficult Concepts
  - animation is a good way to quickly describe a complex point/concept
- Highlighting
  - use colored text, circles, arrows, etc. to help stress important points

Slide Organization

- Each slide should have one main theme/point
  - slide title should reflect that theme/point
- Main bullets should address the slide's main theme
  - if they don't, they probably need to be on another/different slide
- Sub-bullets describe bullets they are under or show results of that bullet
  - outlines are supposed to have 2+ heading at any given level
    - not true for bullets/presentations
    - a single bullet is OK
- Figures
  - organize onto slide to fill white space
  - link by alignment, arrow, etc. to appropriate bullet
  - include text labels of main points in figure
    - or highlight important data from figure in slide text
  - (if appropriate) include figure captions
    - no figure numbers needed in presentations



Professional Papers

General Dos and Don'ts

- **Dos**
  - know your audience
    - become familiar with the topics and level of detail for journal/conf.
  - check for specifications or templates
    - formatting requirements, paper length, etc.
  - double check the literature for recent papers related to your work
  - follow guidelines of professional writing
- **Don'ts**
  - plagiarize
  - submit a paper until the data/results are ready
  - submit papers with English error, esp. misspellings!
    - always have someone review to find typos

TRANS-JOUR-IEEE-template.doc has a TON of useful information and suggestions

Professional Writing Don'ts

- **Don't**
  - use slang phrases (cool, over the top, tad bit, etc.)
  - use contractions (don't, won't, can't, we'd, let's, etc.)
  - begin sentences with conjunctions (And, But, Or)
    - make compound sentences or use Also, However, Alternatively
  - avoid first & second person
    - "Next we plugged in the scope" → "Next, the scope was plugged in"
    - "As you can see" → "As one can see"
    - I personally try to use these only to clarify references to our work
      - "However, this problem is overcome in our new circuit"
  - avoid non-specific subjects
    - "There will be a button to push on the window that opens."
    - "The button to push will be on the window that opens."
  - avoid possessive case
    - "the chip's features" → "the features of the chip"

References (IEEE-style)

- What to cite
  - 3 main reasons for references
    - outlining the history of a topic/concept
    - citing comparisons/alternatives to your work
    - citing source of idea/design/technique used or adapted in your work
  - Never copy text from a paper/book, unless you specifically quote (using "xxx") the work and reference it. It is best to always express the idea of the reference without quoting, but in either case, you MUST cite/reference the source of the information
- When to cite
  - within the sentence (or at end) that you introduce the idea being cited
  - afterward, you can refer to this idea without reference
    - but if you introduce a new idea from the same source, you should cite the source again

References II (IEEE-style)

- **Which reference to cite**
  - Always provide the most available reference; if you want to reference a Thesis, it's better to reference the material from a conference/journal paper if it was reported outside of the thesis. Also, it's better to have a journal reference than a conference reference since journals are more available to the public.
- **How to cite multiple references**
  - If a new idea was first reported in ref X and later cited in ref Y, you should either cite ref X or cite both sources. Never site a secondary source (one that itself cited an older source) unless that secondary source changed things is such a way to make their idea unique compared to the original source.
- **Other reference questions?**
  - Papers that have not been published should be cited as "unpublished"
  - Papers that have been submitted for publication should be cited as "submitted for publication"
  - Papers that have been accepted for publication, but not yet specified for an issue should be cited as "to be published

References III (IEEE-style)

- **How to format references**
  - list all authors
    - don't use et. al. unless there are more than 6 authors
  - place the title of the paper in quotations
    - include a comma at then end, before the ending quotation mark
  - italicize journal or conference names
  - italicize book titles (this is IEEE format, but sometimes you'll find them underlined)
  - always include volumes and issue number
    - these are always available for IEEE journals.
  - always include pages and dates
  - **always end with a period**
- Examples
  - A. Mason, N. Yazdi, K. Najafi, and K. D. Wise, "A Low-Power Wireless Microinstrumentation System for Environmental Monitoring," *Digest, Int. Conf. on Sensors and Actuators (Transducers' 95)*, Stockholm Sweden, pp. 107-110, June 1995.
  - N. Yazdi, A. Mason, K. Najafi, and K. D. Wise, "A Generic Interface Circuit for Capacitive Sensors in Low-Power Multi-Parameter Microsystems," *Sensors and Actuators,* vol. 84, pp. 351-361, 2000.

Fig/Table/Eqn Formatting (IEEE)

- Where to place & cite figures
  - Figures should always come AFTER (top to bottom, left to right) they are introduced in the text
  - When possible, group figures together at top/bottom of the page or in one column
    - try not to place small bits of text between figures
- Figure Captions
  - Figure #. Description caption.
    - placed below the figure
    - can replace '.' with ':'
    - can replace Figure with Fig., but be consistent throughout paper
    - always end in a period, even if caption is not a proper sentence
    - always left justified (be careful with text boxes)
- Other Figure Issues
  - when referring to a specific figure, always capitalize Figure

these are rules for IEEE technical papers; not requirements for your ECE445 design project reports, but good guidelines to follow

Fig/Table/Eqn Formatting (IEEE)

- Where to Place Tables
  - same rules as figures
- Table Captions
  - TABLE RM#. DESCRIPTIVE CAPTION
    - captions always ABOVE the table
    - font format is 'small caps'
    - table number is roman numerals (I, II, IV, etc.)
    - no period at the end
    - center justification
    - often caption is on a line under the TABLE RM#
- Equations
  - centered, with (#) right justified
  - introduce with phrase such as "as given by"
  - referenced by (#) – not eqn. # or eqn (#)
  - do not refer to equations that have yet to be presented
  - always define EVERY variable before or after the equation
    - example: "where K is..." Do not indent the "where" paragraph

these are rules for IEEE technical papers; not requirements for your ECE445 design project reports, but good guidelines to follow

Common English Mistakes

- Conjunctions
  - great for connecting compound sentences, but DO NOT START A SENTENCE with *and*, *but* & *or*
    - it's improper for technical writing
  - Example
    - "The circuit preformed well. And the noise level was low."
    - "The circuit preformed well, and the noise level was low."
    - "The circuit performed well. In addition, the noise level was low."
- Hyphenation
  - some word combinations are hyphenated only when used as adjectives
  - when used as a noun they are not hyphenated
  - Example: *an on-chip sensor is implemented on chip*
  - Do not hyphenate after the word **highly**
    - Example: *a highly linear response from a high-performance amplifier*

Common English Mistakes II

- Tricky Words
  - like vs. such as
    - Most often, you should replace the work *like* with *such as*.
    - If it sounds correct when you read it with 'such as' then use *such as*.
  - because vs. since
    - The word *since* is used only when time-dependent information is provided
      - e.g., "Since I was a boy, I liked playing games."
    - Do not use it unless time is involved.
      - "Since I like fruit, I'll eat a banana," is not correct. Here, you should use *because*.
    - Always use *because* unless the result is time dependent on the phrase.
  - complement vs. compliment
    - complement = to match; got together
    - compliment = admiring comment; flattering remark
  - principle vs. principal
    - principle = standard; belief; rule or law
    - principal = most important; chief; primary
  - verses vs. versus
    - verses = units of a poem, song, etc.
    - versus = opposed to

MICHIGAN STATE UNIVERSITY

Outline for "How To Speak" Video

- How to Start
  - (don't Joke)
  - Promise
  - Menu
- The Big Four
  - Cycle (repeat)
  - Verbal punctuation
  - Near miss
  - Ask question
- Time & Place
  - 10 or 11am
  - Well lit
  - Full
- The Blackboard
  - Draw
  - List
  - Target
- Overheads
- Props
- Style
  - (don't Copy)
  - Adapt
  - Eccentric
  - Story
- How to End
  - (don't Thank)
  - Joke
  - Deliver (remind of promise)
  - Ask for Questions
  - Salute
- Questions
  - Ask a question
  - Non-verbal communication
  - Conversation vs. lecture
  - Use of slides
  - Being nervous

http://isites.harvard.edu/icb/icb.do?keyword=k1985&topicid=icb.topic650252&panel=icb.topic650252:rwatch$8%3Fentry%3D18850&state=popup&view=watch.do&viewParam_entry=18850&viewParam_watchfull=t