Basic writing advice

- Organize your thoughts before you write. It is important that the reader can follow your writing. Read what you wrote to see if it would make sense to everybody else.

- Organize your writing into points or arguments. Stick to making one point or one argument at a time. Then move on to the next.

- Be clear and precise. Write what you want to say and nothing more. Get to the point.

- Never be vague. “Some people”

- Never generalize. Avoid using absolutes such as always, all, and never unless you are absolutely certain and you know for a fact that it is always, all or never.

- Be brief. Do not use verbose language.

- Do not use clichés. Do not write in a pompous manner.

- Stay to the facts. No commenting (e.g., I don’t like it, or that was stupid). Do not express feelings (e.g., It felt awkward). Be objective (i.e. impartial) and never subjective.

- Never present a speculation as a fact. Always confirm and verify before you use it as a fact.

- Do not use adjectives of impression, e.g., nice, fantastic, amazing, awesome, exceptional, etc. Exception: use cool only when the object is actually of low temperature.

- When you use comparatives (larger, heavier), always make sure that the reader knows what you are comparing it with. Use than.

- Avoid using the word better. If you find yourself using better, then ask yourself “in what respect is it better?” If you cannot give an objective answer, then it is probably a personal preference (and therefore an irrelevant statement). If you can answer, then use that answer instead of better. Example
  - You write “My phone is better than yours.”
  - Ask “In what respect is it better?” Answer: “It has a brighter and larger screen.”
  - Then change your writing to “My phone has a brighter and larger screen than yours.”

- Avoid the word like; especially that colloquial fill-in (It was like ten feet long)—that’s a no-no.

- Do not use colloquialisms.

- Use full words. Write, refrigerator instead of fridge; write because instead of ‘cause; write until instead of till.

- Write in full sentences. Avoid using and between two full sentences.

- Use correct spelling.

- Use proper punctuation.

- Use proper grammar.

- Avoid passive voice.
“Writing Technical Articles” (excerpts)

Taken from http://www.cs.columbia.edu/~hgs/etc/writing-style.html

Things to Avoid

• **Too much motivational material.** Three reasons are enough -- and they should be described very briefly.
• **Describing the obvious parts of the result.** "Obvious" is defined as any result that a graduate of our program would suggest as a solution if you pose the problem that the result solves.
• **Describing unnecessary details.** A detail is unnecessary, if its omission will not harm the reader's ability to understand the important novel aspects of the result.
• **Spelling errors.** With the availability of spell checkers, there is no reason to have spelling errors in a manuscript. If you as the author didn't take the time to spell-check your paper, why should the editor or reviewer take the time to read it or trust that your diligence in technical matters is any higher than your diligence in presentation? Note, however, that spell checkers don't catch all common errors, in particular word duplication ("the the"). If in doubt, consult a dictionary such as the (on line) Merriam Webster.

Other advice

From Bill Stewart (Slashdot, May 7, 2006), edited

• Write like a newspaper reporter, not a grad student.
• Your objective is clear communication to the reader, not beauty or eruditeness or narration of your discoveries and reasoning process. Don't waste their time, or at least don't waste it up front.
• Hit the important conclusions in the first few sentences so your reader will read them. If you'd like to wrap up with them at the end of your memo, that's fine too, in case anybody's still reading by then, but conclusions come first.
• If you're trying to express something complex, simplify your writing so it doesn't get in the way. For something simple, 10th grade language structures will do, but if it's really hairy stuff, back down to 8th grade or so.
• Think about what your audience knows and doesn't know, and what they want and don't want. Express things in terms of what they know and want, not what you know.

From MarkusQ, Slashdot, May 7, 2006

• **Top down design** Starting with an outline and working out the details is the normal way of tackling an engineering problem.
• **Checking your facts** Engineers should be used to checking anything that is even remotely doubtful before committing to it. So should writers.
• **Failure mode analysis** For each sentence ask yourself, could it be misread? How? What is the best way to fix it?
• **Dependency analysis** Are the ideas presented in an order that assures that each point can be understood on the basis of the readers assumed knowledge and the information provided by preceding points?
• **Optimization** Are there any unnecessary parts? Does the structure require the reader to remember to many details at once, before linking them?
• Structured testing If you read what you have written assuming only the knowledge that the reader can be expected to have, does each part work the way you intended? If you read it aloud, does it sound the way you intended?

“Writing Scientific Manuscripts: a guide for undergraduates” (excerpts)

Writing Style

The basic rules of writing apply to any paper; however, they are especially important to a professional document being submitted for publication. Before submitting a paper to a journal, make sure that it:

• Contains no misspellings.
• Is grammatically correct.
• Meets the formatting guidelines of the journal
• Avoids the first person.
• Does not contain personal anecdotes or stories
• Is not trying to be clever—research manuscripts are no place for story telling, only reporting of facts

A Note on Scientific Misconduct

Scientific misconduct is grounds to reject a manuscript. Misconduct can range from inappropriate treatment of test subjects to outright fraud. Types of misconduct include:

• Gift Authorship: This is when a researcher who had nothing to do with the research is listed as a co-author. Every author on a paper must have been involved with the research.
• Redundant publication: Authors cannot publish the same material in different places. A new paper may discuss the ideas and results of a previous paper, but every paper must contain new information, interpretations, or results. (This is not true for abstracts – a scientist may submit an abstract for a conference, then publish that information in a scientific journal. Redundant publication refers only to peer-reviewed publications).

Types of fraud:

• Plagiarism: Copying data, ideas, or work by other authors, without giving them credit. Discussing another researcher’s idea is not plagiarism, unless the author tries to pass it off as his/her own idea. Again, it is difficult for referees to catch plagiarism, unless they know what they are looking for.
• Fabrication: Inventing or faking results. It is almost impossible for peer review to catch this kind of fraud. It is usually discovered when other researchers try to reproduce the author’s results. Fabrication of results is never done innocently, and it leaves a permanent mark on the scientists’ career – if it doesn’t destroy it completely.
• Falsification: “Tweaking” or manipulating results (it is a type of fabrication). It is difficult for reviewers to catch this kind of fraud, and it is usually tough for other researchers too.
• Conflict of interest: If an author stands to make a significant financial profit from the results of a study – and does not state that explicitly – this constitutes a type of fraud. For example, if an author who owns stock in a pharmaceuticals company publishes a study indicating that a new drug by that company is simply fantastic, he must indicate that he owns stock in the company. Though seldom an issue for undergrads, you should still know about it.