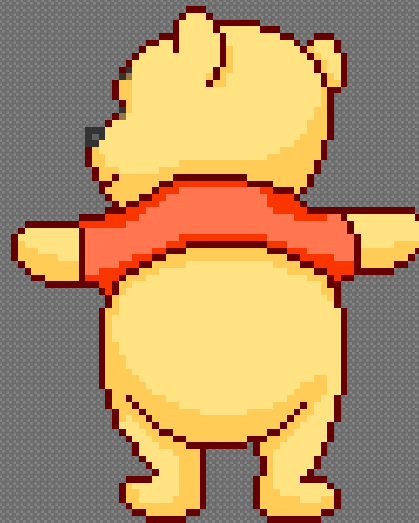# Grammar and style notes for scientific writing

1ST

Scientific writing style

Exact

- **Word choice**: make certain that every word means exactly what you want to express. Choose synonyms with care. Be not afraid of repetition.

- **Avoid vague expressions** which are typical for the spoken language.E.g. the interpretation of words which approximate quantities (''quite Large'', ''practically all'', ''very few'')

- **Make clear what the pronouns refer to**. Simple pronouns like this, that, these, those are often the most problematic, especially when they refer to the previous sentence.

- **Avoid ambiguous and illogical comparisons**. These are often due to missing words or nonparallel structures. E.g. ''Female students draw concept maps more often than male students.''

- **Antrhopomorfism**: do not attribute human characteristics to machines

- **Incorrect grammar and careless sentence** structures can create ambiguities!

Clear

- Use illustrative titles which describe the essential in a chapter or a section.
- Write a brief introductory paragraph in the beginning of each chapter or section with subsections.
- Divide the text logically into sentences and paragraphs
- Place the adjective or the adverb as close as possible to the word it modifies
- Write numbers as digits when they refer to sizes or exact measurements
- Use punctutation to support meaning

Compact

- Say only what needs to be said
- Short words and short sentences are always easier to comprehend
- Weed out too detailed descriptions
- Don't describe irrelevant or trivial observations
- Avoid wordiness
- Use no more words than are necessary
- Avoid too long sentences and paragraphs

Smooth

- Verbs: Stay within the chosen tense
- Use verbs rather than their noun equivalents and Prefer active to passive voice
- Avoid long noun strings!
- Each pronoun should agree with the referant in number and gender.
- Transitional words help to maintain the flow of thought, notice: some transitional words (while, since) can be used in several meanings
- Do not use emphasis (italics) when it is not needed, and metaphors can sometimes help to simplify complex ideas. However, Don't overuse them Don't mix several metaphors in one sentence

Objective

- Use the 3rd person rather than the 1st person
- Use emotionally natural expression
- Use words which are free from bias (implied or irrelevant evaluation)
- Select an appropriate degree of specifit
- Differences should be mentioned only when relevant

2ND

Verbs

Number and person

- When the subject is singular third person (she/he/it), the verb needs suffix -s (in the present, positive sentence
- Be careful with special phrases:
  "A number of new experiments were done" (plural)
  "Plenty of time was spent…" (singular)
- If the number of the subject changes, retain the verb in each clause

Tenses (temporal forms)

- Default: the present
- Past or present prefect (but not both) when you describe previous research (literature review)
- Past tense to describe the experiments and their results
- In scientific writing, the default is present (is)
- Use past tense (was) only for good reason
- Past perfect (had been) is seldom neede

Active or passive voice, which person?

- Use of passive voice

  a.) In active voice the actor is known, while in passive voice it is unknown
  b.) In the basic form of passive, you can express also the actor
  c.) It is often recommended to prefer active voice, but in scientific writing passive voice is sometimes convenient
  d.) Often the purpose determines the voice
  e.) However, do not overuse passive, and do not chain passive expressions

"It is" and "There is/are"

a.) A formal subject "it" is sometimes used in   passive expressions: "It is often recommended [reference] that..."

b.) Typical verbs in this expression are: say, suppose, consider, expect

c.) "There is/there are" is a similar expression, but now we don't need the passive

d.) The verb is nearly always "be" (sometimes   "exist" or something else)

e.) Notice that the verb follows the real subject's number. E.g. "There were a lot of outliers in the data set 1."

- Other passive expressions

  a.) ''We'' can be used as passive. E.g. ''In Chapter X, we define the basic concepts''.

  b.) ''You'' is sometimes used as passive, especially in manuals.

  c.) ''People'' when you refer generally to people.

- Person?

a.) Basic rule: avoid the first person (no opinions, but facts)
b.) Referring to yourself: you can talk about "the author". E.g. "All programs have been implemented by the author."
c.) Gender-neutral language: when you refer to an unknown user, student, etc.

Other notes

- Do not use short forms "isn't, can't, doesn't", but "is it, cannot, does not".
- "be verb+ing" form when something is currently happening or takes some time
- Some verbs require that the following verb is in -ing form :
  {enjoy, avoid, succeed in, finish, keep, mind, practice, riskg + verb + ing}
- Special phrases: "be used to", "be (un)likely to"

Noun syndrom

"Noun syndrome" = use of common verbs {be, do, have, make, …} + a noun

E.g. "We can get better understanding…","Different people have different responses to the methods"

THANK YOU