Writing and preparing your manuscript in English
Part 2: Scientific writing

Taught by:
Language and Terminology Service
This guide offers you advice on scientific writing.

The purpose of scientific language and writing is to document, report and exchange knowledge in the most direct and objective way possible. Therefore, scientific texts must be:

- **Accurate and precise.** Use simple and direct language and avoid vague or ambiguous words and sentences.
- **Clear and concise.** Use simple and direct language and avoid unnecessary detail and superfluous words.
- **Objective.** Support statements and ideas with appropriate evidence and avoid referring to personal thoughts or beliefs.

- **Structure**
- **Paragraphs and sentences**
- **Vocabulary and terminology**
- **Punctuation signs**
- **Symbols, abbreviations and acronyms**
- **Graphic features of the text**
- **Equations and formulae**
- **Bibliography, in-text citations, references and footnotes**
- **How to produce a glossary of terms and write definitions**
- **Good writing practices**
- **Oral presentation**
- **Additional references**
CHARACTERISTICS OF TECHNICAL AND SCIENTIFIC WRITING IN ENGLISH

Essential goal of specialised texts and language

Share complex knowledge in the most direct and objective way

Accuracy: simple and direct language using specific terminology
Concision: clear language with no superfluous words
Neutrality: using objective evidence and no personal thoughts
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Text structure > easy understanding of the content

• Language structure

Paragraphs: topic/subtopic, 2-5 sentences, intro-dev-conclusion
Sentences: short and simple, keep parenthetical remarks to a minimum, important ideas at the beginning
Markers and connectors: identify and relate the information contained in paragraphs and sentences (with regard to; in relation to; firstly, secondly; first, second; etc.)

⚠️ On the one hand...on the other hand just when contrasting items.
Chapter 2 presents an overview of Sepsis from three different perspectives. First of all, we provide a philogenetics overview, which shows that Sepsis is a cross-species syndrome and therefore as old as mankind. Secondly, we present an historic overview, starting from the first documented case of sepsis in Plutarch. In this section, we also present the most modern definitions of Sepsis as a continuum (i.e. Infection, Inflammatory Response, Sepsis, Severe Sepsis, Shock and Multi Organic Dysfunction). This chapter is closed with a description of the Sepsis scoring systems most widely used in clinical practice.
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Do not over-use capitals
mankind > humankind (preferably)
first (of all), second OR firstly, secondly
an historic overview > a historical overview
multi-organic, although apparently it should be multiple organ dysfunction
Accordingly, the main objectives of the current work were, on the one hand, to develop a CWs mathematical model able to describe the most common processes taking place within these systems. And, on the other hand, to use this model to shed some light on the internal functioning of these systems in the long-term.

No items are being contrasted. We could use first, second.

On the other hand, numerical models involve the use of some sort of special and/or temporal discretization techniques to obtain approximate solutions to mathematical equations. [...] We do not even have the first item (on the one hand). We could use additionally.
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Language

• Vocabulary:
  – Formal and neutral.
    E.g.: 1.5 million kids under 5 years of age > children
  – Use verbs rather than nouns.
    E.g.: used as a reference in the calculation of SSE > to calculate
  – Use words with a specific meaning, avoid ambiguous words.
  – Avoid empty nouns and verbs.
    E.g.: The application of this technique allows sampling the date of...
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Personal references

Active or passive

Consider your supervisor’s preferences, the general trend in your area, etc.
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Passive

• **Readers do not need to know who did the action:**
  – Patients clinically suspected of infection may be diagnosed with septic shock.

• **Methods and Results sections:**
  – This strategy was adopted to simulate attachment and detachment processes of particulate components.
  – Tephra dispersal hazard maps were also produced for specific time periods.
Passive > criteria

• Verb form for a short subject, longer info towards the end:
  – Patients clinically suspected of infection, an abnormal temperature and tachycardia may be diagnosed with septic shock if...
  – Septic shock may be diagnosed in patients clinically suspected of infection, an abnormal temperature and tachycardia if...

• Facilitate movement from old information to new:
  – The widespread use of antibiotics, invasive catheterism and other mechanical devices also play a role in the onset of sepsis, severe sepsis and septic shock. ____________________________ if they develop at least one of the following [...]

  (Both are correct. However, by choosing the 2nd sentence, you are providing more information about an item that you just introduced and not starting the sentence with a new item. Although the 1st sentence would also be right because then patients is the subject of the main clause and the subordinate clause.)

• There are many other criteria. Consult additional sources.

Manipulated examples. Source: UPCommons (http://hdl.handle.net/2117/94886)
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Active (I/we)

• *Introduction section*:
  – To this regard, in this work *we focus on* Constructed Wetlands technology...
  – However, as *we will explain* in this work...

• *Discussion and Conclusion sections*:
  – In Section 9.4 *we list* all the essential processes that models developed at current state of the art should include...
  – *We strongly believe* that the discrepancies and controversy that we have seen in the literature may be due to this fact...
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Punctuation signs

- **Comma**: never put a comma between the subject and the verb.
- **Question and exclamation marks**: with no space, no need for additional punctuation.
- **Ellipses (...)**: just three dots, no space before them. Do not over-use, “etc.” is preferred; do not use an ellipsis and “etc.” in combination: etc…
- **Brackets**: if they enclose a complete sentence, place the punctuation sign before closing bracket.
- **Em dashes**: do not over-use. If the parenthetical remark comes at the end of the sentence, omit the closing dash.
Numbers

- **Decimal numbers**: separated by a dot (not a comma), with no spaces.
  E.g.: *Pi is approximately equal to 3.14159.*

- **Thousands**: international standards endorse using a thin or non-breaking space (Ctrl + Shift + space). A comma is also acceptable, but be consistent throughout the text.
  E.g.: *Over 70,000 patients diagnosed with... / 70,000 patients*

⚠️ Do not use punctuation in years and page numbers.
Symbols

- **Standards**: use physical, chemical and mathematical symbols in the manner established by international standardisation bodies (italics or roman type, capitalisation, etc.).
- **Do not put a dot** at the end of the symbol (except at the end of a sentence).
- Leave a **space** between the symbol and the quantity. Use a non-breaking space to prevent line breaks. In English we do not leave a space before %.
- Symbols have **no plural forms**.
- **With intervals or ranges**, repeat the symbols for each value. E.g.: Leadbetter and Hort used lower values \((10^{-12} \text{ mg/m}^3 \text{ to } 10^{-15} \text{ mg/m}^3)\).
• **Terminology:**
  
  – Write terms in the language of your thesis (whenever it is possible).
  
  – Italicise terms in other languages and words/phrases in a metalinguistic sense: *The term bulb refers to the glass part of an electric lamp. (Metalinguistic use)*
    
  – The bulb is made of glass. (General use)
  
  – Provide sufficient information on foreign terms.
  
  – Do not over-use capitals, use them only when necessary (acronyms, proper nous, etc.). E.g.: *a Shack-Hartmann wavefront sensor or SHWFS.*
  
  – Avoid using different terms to refer to the same thing. E.g.: if you used wave action do not call it wave activity elsewhere.
  
  – Consult the terminological resources that are available to find terms you were not aware of, to ensure that you are using a term correctly, both considering spelling and how they are used in your field.
Acronyms

- **Acronyms**: use capital letters.
- Do **not use dots** in between the letters.
- **Plural**: if the acronym does not stand for a plural, you can add an -s. E.g.: *ICTs, PCs*.
- Do **not italicise** acronyms that stand for words in other languages.
- Ensure that the reader knows what they refer to.
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Equations and formulae

• **Criteria** set by international bodies. Also in the **running text**.
• Use normal **punctuation** even if they are on a separate line.
• Use your **word processor’s tools** for writing equations and formulae.
• **Equations:**
  – If you set it off from the running text, leave a blank line before and afterwards.
  – Centre-align and indent equations that are part of the solution to a problem.
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Equations and formulae

• **Mathematical formulae:**
  – Separate them from the text, with blank lines before and afterwards.
  – Leave a blank space between operators and digits.
  – Divide at the points where the signs $+ - x =$ appear. Do not divide operations in brackets, square brackets, etc.

• **Chemical formulae:**
  – Incorporate empirical and molecular formulae in the running text. Separate condensed and structural formulae from the running text with a blank line before and afterwards.
  – Do not divide them.
There is not much difference between the criteria in English and other languages such as Spanish.

- Do not over-use capitals.
- Do not use more than one typographical resource (italics, bold, underline) to highlight an element.
- Italics for words in other languages.
- Bold for words you wish to draw attention to or for the titles of chapters, sections and subsections.
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Bibliographic references, in-text citations and footnotes

• **Footnotes:**
  – The superscript number is placed after all punctuation marks except the dash.
  – Footnotes should appear on the same page as the text to which they refer.
  – Use a smaller size for the footnote. Word processors (like Word) allow you to create footnotes automatically.

Section under development. Further information on the Bibliotècnica website:

[https://bibliotecnica.upc.edu/en/](https://bibliotecnica.upc.edu/en/)
IF YOU ARE WRITING IN ENGLISH CONSIDER THE FOLLOWING

Good writing practices for your thesis

- **Spell-checker**: enable it, select the right language for fragments in other languages, remember its limitations. Do not mix **British and American varieties** of English (optimisation/optimization).

- When **copying, pasting, replacing or moving** parts of the text, make sure you do not leave behind truncated phrases, inconsistencies, and punctuation and other mistakes.

- **Reread** the text looking out for the different aspects in this guide one at a time.

- **Automatic translation**: revise the result carefully.

- **Double spaces**: eliminate them with the find-and-replace function. Your spell-checker will not detect them.
EXTERNAL RESOURCES

Section Writing research articles and theses ([link](#))

- **Academic Phrasebank**: It provides examples of useful phrases to structure your paper, sorted by categories.
- **English for Writing Research Papers**: Author: Adrian Wallwork. Book divided into two parts: writing skills and sections of a paper. A very detailed and useful resource!
EXTERNAL RESOURCES

Section Corpora: finding words in their context ([link](#))

- **Hyper Collocation**: A search engine for finding example sentences from more than 800,000 papers included in arXiv.
  E.g.: “diagnosed”
Questions and queries

Atenea forum
https://atenea.upc.edu

Libraries, Publications and Archives Service
info.biblioteques@upc.edu

Language and Terminology Service
demana.slt@upc.edu

Thank you.