

Computer Essentials for Engineers

GNG1103 – Engineering Design

***When writing your project deliverables, you are expected to follow this technical report format.**

Background

Microsoft Word is a powerful word processing software widely used as an essential tool for creating and formatting documents. Designed to provide a user-friendly interface and a comprehensive range of features.

One of the key advantages of MS Word lies in its versatility and extensive formatting capabilities. It allows users to easily customize the layout, font styles, headings, and page numbering, ensuring that reports adhere to specific university guidelines or formatting requirements. The software provides a variety of pre-designed templates that cater to various academic disciplines, facilitating the creation of professional-looking reports with minimal effort. Moreover, MS Word offers a wide array of formatting tools, such as tables, graphs, and images, enabling students to present their data and findings in a visually appealing and organized manner.

Furthermore, MS Word provides an extensive set of spelling and grammar checking tools, assisting students in maintaining the accuracy and professionalism of their writing. The software automatically highlights potential errors and suggests corrections, ensuring that the final report is free from grammatical mistakes and typos. Additionally, MS Word offers a built-in thesaurus and dictionary, aiding students in expanding their vocabulary and enhancing the overall quality of their academic writing.

In terms of organization and management, MS Word offers a variety of features that greatly facilitate the process of writing reports. The software allows users to create an outline, insert headings, and easily navigate through different sections of the document. This hierarchical structure promotes logical flow and coherence within the report, making it easier for readers, including professors, to follow the content. Moreover, MS Word provides tools for creating a table of contents, footnotes, and citations, enabling students to maintain proper referencing and meet academic integrity standards.

Overall, MS Word's user-friendly interface, extensive formatting options, collaborative features, spell-checking tools, and organizational capabilities make it an invaluable tool for writing reports in university. Its versatility and reliability significantly enhance the efficiency and quality of the writing process, helping students create well-structured, visually appealing, and error-free reports.

Part B – Documents (MS Word)

Part 1. Create a Document

1. **Open** MS Word and **create** a “Blank Document”.
2. **Add** the text: “Basic Technical Document” and **hit** the *Enter* key.
3. **Type** your own name and **hit** the *Enter* key once again.
4. **Include** the current date in a format like “January 7, 2022” and **hit** *Enter* again.
5. Under the *Home/Paragraph*, **Click** on the center button to center your document
6. Save your MS Word document by **selecting** *File/Save* or *File/Save As*. Note that you probably want to save periodically and you can also use the keyboard shortcut of *Ctrl+s* or *⌘+s* (on a MAC) to save time when doing this.
7. Notice the paragraph marker symbols at the end of the lines (¶), which can sometimes be helpful when trying to determine why a document is looking a certain way. To turn the display of special “white space” characters (e.g. paragraph markers, tabs, spaces, etc.), **click** on the icon that is circled in red in the diagram below. Try it.

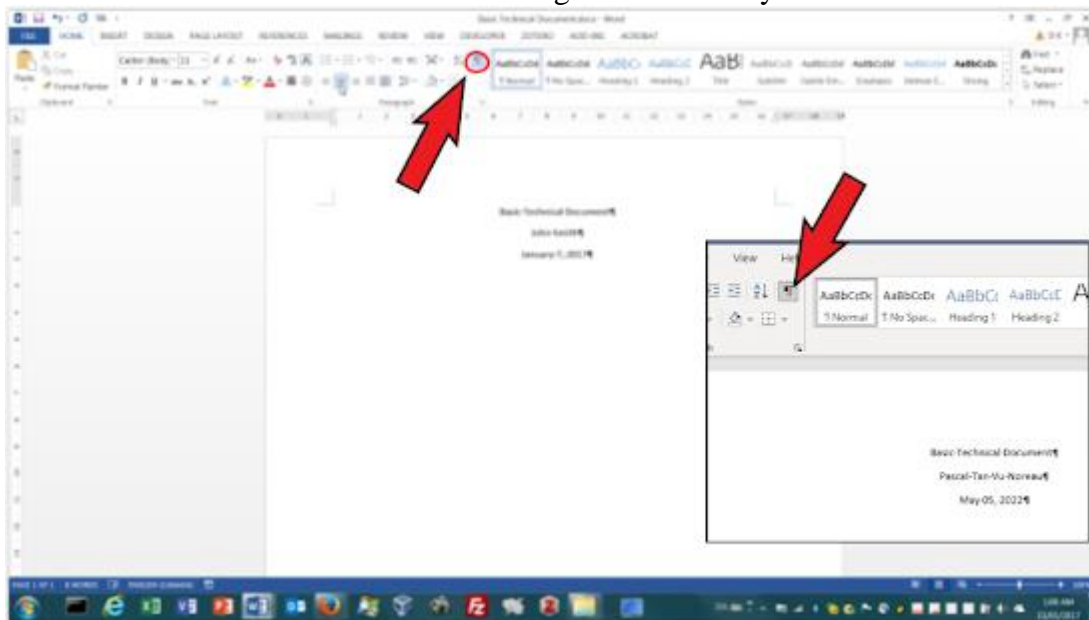


Figure 1 : Microsoft Word interface

8. We can also adjust the line spacing after or before a paragraph. **Right-click** anywhere in a paragraph and then **select** “Paragraph...” from the menu. Then **adjust** the spacing before and after as shown in the diagram. This is better than typing in a bunch of extra paragraph markers and/or changing their font size, etc.

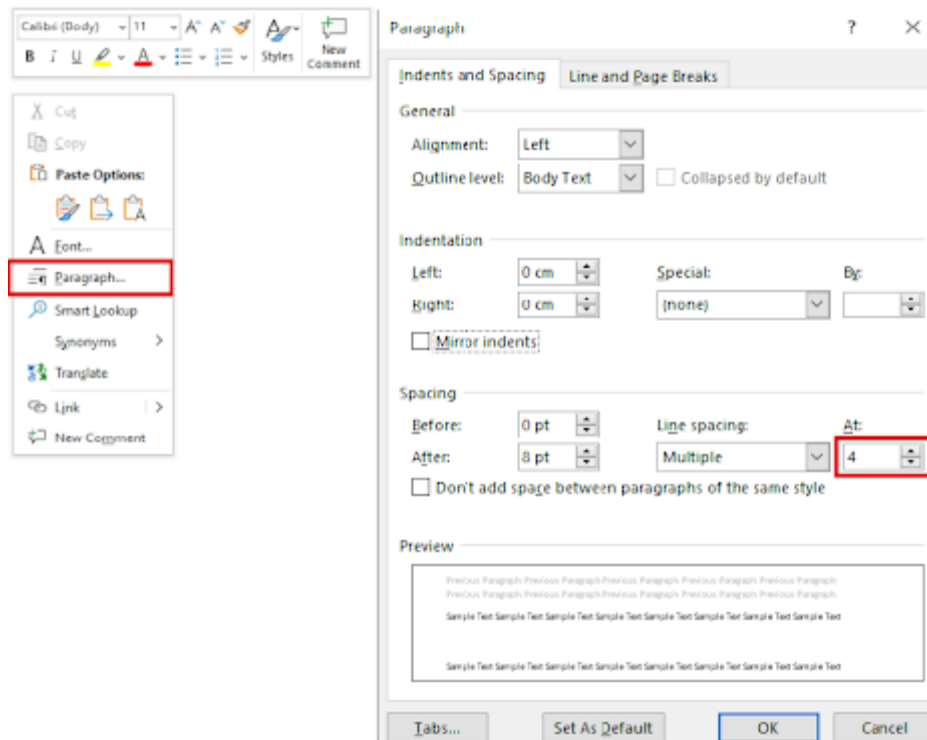


Figure 2 : Paragraph settings

9. We next insert a page break after the last line by **selecting** *INSERT/Page Break* in MS Word or use the *CTRL+Enter* or *⌘+Enter* (on a MAC) keyboard shortcut. The next page is blank by convention, so you can insert yet another page break. This allows the abstract to start on the same side as the title page.

Question 1. How can we align our document to the right side of our page?

Part 2. Headings

Generation of the Table of Contents requires headings and styles that we will need to create in our main body. This document will only have seven numbered chapters. We have some intermediate subsections in chapter 5, to practice inclusion of a heading hierarchy in a document. The hierarchy is as follows:

1. Introduction
2. Related Work
3. Third Main Subject Heading
4. Fourth Main Subject Heading
5. Fifth Main Subject Heading
 - 5.1 The first subsection beneath the fifth main subject heading
 - 5.2 The second subsection beneath the fifth main subject heading
 - 5.2.1 First subsection
 - 5.2.2 Second subsection
 - 5.2.3 Third subsection
6. Conclusions and Recommendations
7. References

1. From Brightspace, **download** the file called “Basic Technical Document.doc” and **open** it.
2. Select the heading ‘Introduction’ by **clicking** anywhere in the text and then **click** on the *HOME/Styles/Heading 1* box in MS Word (see highlighted icon under the cursor in the next figure). The text will change to the defined format, which will show you that the paragraph style for the “Introduction” heading has been changed successfully (see the next figures).

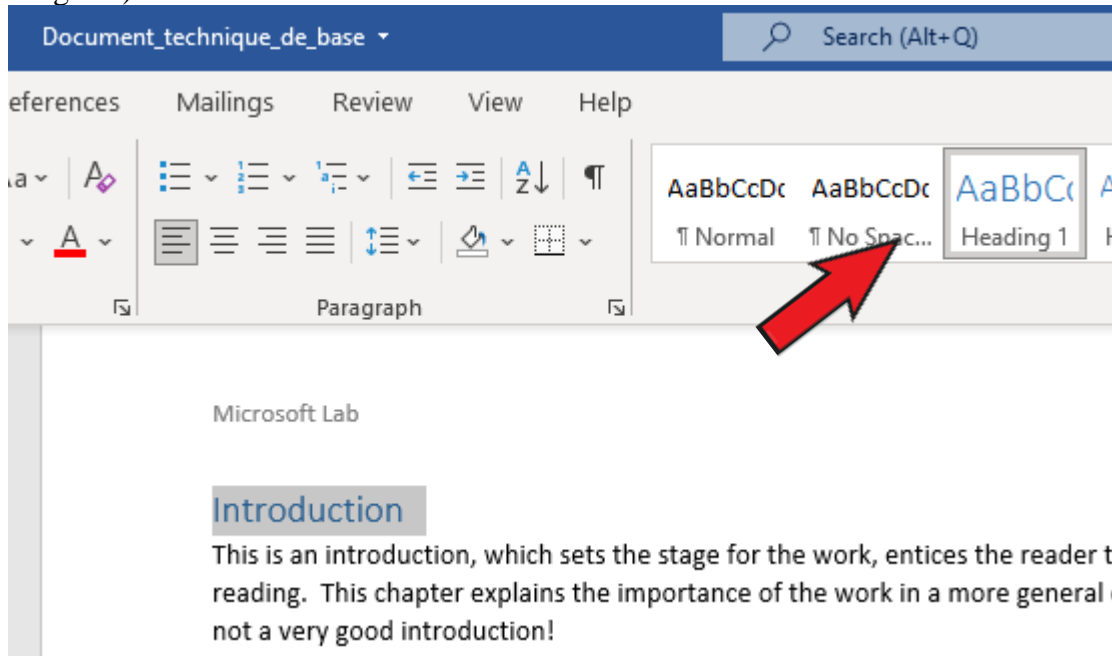


Figure 3 : Different heading styles

3. **Repeat** step (3) until all first-level headings are assigned the heading style of *Heading1*. You will need to select the text in question and then press the appropriate ‘AaBbCc’ (Heading 1, etc.) button icon each time to assign the style.
4. We want to have numbered headings. You can find the numbered headings by **clicking** on the multilevel list options in the *HOME/Paragraph* menu and **selecting** the numbering as shown in the picture below.

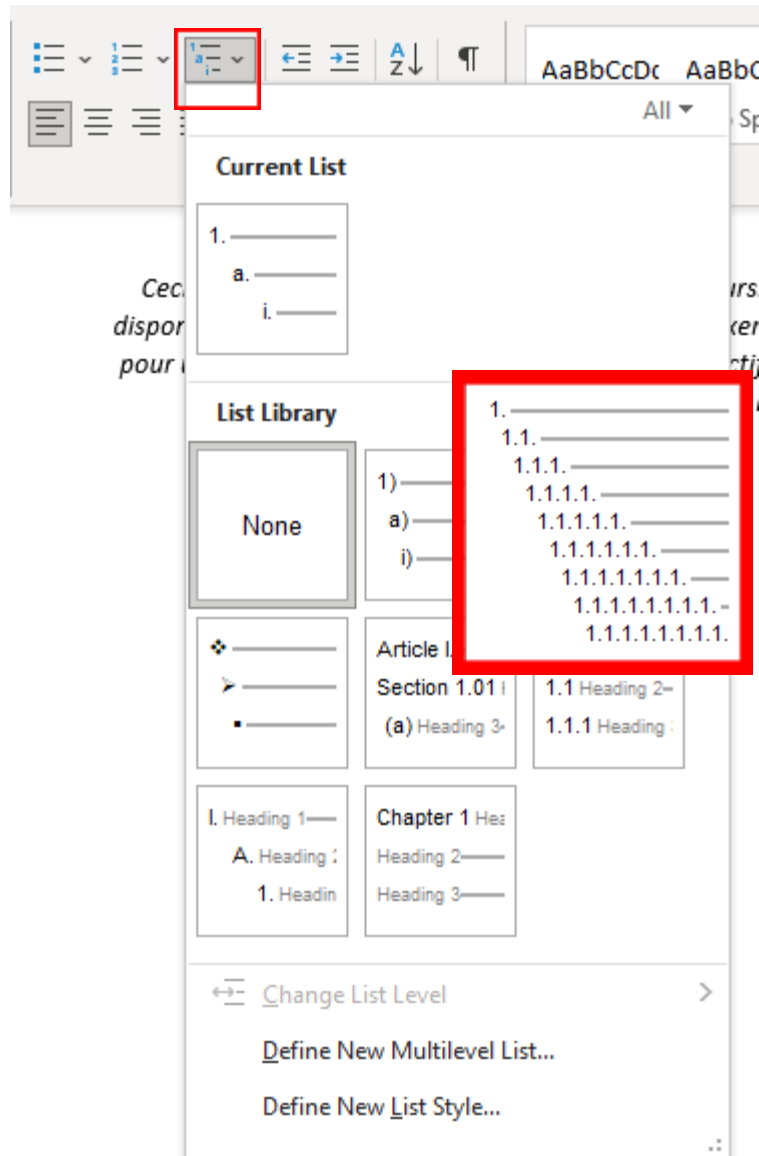





Figure 4 : Different list options

5. After numbering the “Introduction” heading, numbered all first-level heading by **selecting** them and **clicking** on the numbering menu .
6. **Repeat** step (3) for changing the style of all of the headings at each level, using Heading2 for second-level titles and Heading3 for third-level titles.
7. To number all second-level headings, **select** the text to numbered, **click** on the numbering menu  and then **click** on increase indent .

Question 2. How will you number a third-level title?

8. **Assign** the appropriate headings for all third-level headings and **number** them adequately.

The result should be as follows <with the final assigned style shown in angled braces at the beginning of each title heading text>:

<Heading1> Introduction
<Heading1> Related Work
<Heading1> Third Main Subject Heading
<Heading1> Fourth Main Subject Heading
<Heading1> Fifth Main Subject Heading
 <Heading2> The first subsection beneath the fifth main subject heading
 <Heading2> The second subsection beneath the fifth main subject heading
 <Heading3> First subsection
 <Heading3> Second subsection
 <Heading3> Third subsection
<Heading1> Conclusions and Recommendations
<Heading1> References

Part 3. Table of Contents

Question 3. In a document, where should the table of contents be located?

1. To create the Table of Contents, first **place** your cursor where you want the Table of Contents to be created. In MS Word, **click** on *REFERENCES/Table of Contents* on the very




- left-hand side, which has an icon like this (). **Select** the second automatic style.
2. By **right-clicking** and **selecting** “Update Field” in MS Word, it can be updated with a single mouse click, after **picking** the “update entire table” radio button. Try it yourself by **adding** another Heading1 title like ‘Another Heading’ somewhere and then **assign** it a style of Heading1 first. After the update, you should see your new section appear in the updated *Table of Contents*.

Part 4. Citations and List of References (bibliography)

You can create references to external sources. These are often called citations and there are different conventions for their format. References might also be required for figures or tables or even other sections or subsections in the document. These are created in two basic ways, although this depends on the specific version of MS Word that you are using, either using the built-in tool or an add-on. You will use the built-in for now.

1. In MS Word, **select** *REFERENCES/Insert Citation/Add New Source* to get a menu like the one in the next picture.

Figure 5 : Citation generating menu

2. In MS Word, **fill in** the various boxes for the kind of citation you are using. Try it with a simple example of a book source type (there are other types of citations like ‘Journal Article’, ‘website’, etc.). **Fill in** the required fields (You can use fictional information if you want). If you check off the box for ‘Show All Bibliography Fields’, you can see that much more detail and information capture is definitely possible.
3. **Pressing** “OK” creates a citation, which will automatically generate an entry in the bibliography that we will generate next.
 - a. It will also create a source that can be cited again in the document, without requiring you to type in the information again. Check this by **repeating** the previous step. You should now see an entry with the information that you have just entered, provided that you entered something successfully.
 - b. To go back and fill in missing information or to correct information in the citation you just created, you can **use** *REFERENCES/Manage Sources*.
 - c. Make sure the ‘Style’ is set to **IEEE**.
4. Now that we have at least one citation, we can create a bibliography. **Place** your cursor in the desired spot and then **click on** *REFERENCES/Bibliography*, which has an icon like this (). Again, pick the first built-in type.
5. **Pick** the first generic type of Bibliography in the list, as shown by the cursor position in the diagram. When you add more citations, you will need to right-click on the bibliography and **select** “Update Field”. Note that, as with the Table of Contents, you can reformat the title (e.g. centre it and make it bold, etc.). If you want the bibliography to *appear* in the Table of Contents, then **give** the title a heading style of Heading1 and then **update** the Table of Contents. You should now see “Bibliography” (or “List of References” or whatever you called it) appear in the Table of Contents with the appropriate page number.

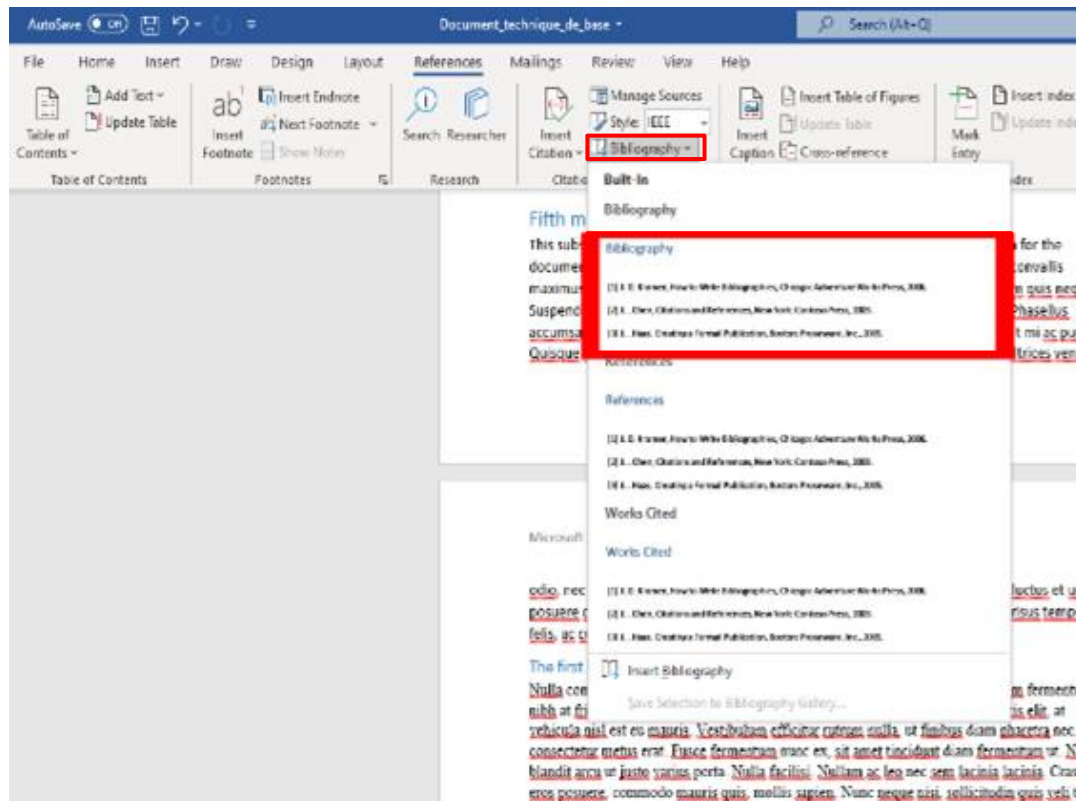


Figure 6 : Different styles of bibliographies

6. There are other add-on tools (e.g. Zotero or Mendeley) that simplify the process even more and also allow you to create a database of your references, so that it is easier to use them in different documents and even auto-fill them from websites. They both have integration with Word where you can more easily maintain shared lists of references when collaborating with others. Here are guides:
 - a. https://www.zotero.org/support/quick_start_guide
 - b. <https://www.mendeley.com/guides/using-citation-editor/01-installing-citation-plugin>

Part 5. Reviewing mode

In this part of the exercise, you will be creating a few different corrections to your document. Along with adding some comments. This is often very useful in group reports.

1. Go to the "Review" tab and Enable "Track Changes". Once you select track changes, you will be asked to either select either, " everyone's ", or " just mine ". For the sake of this exercise, select just mine.

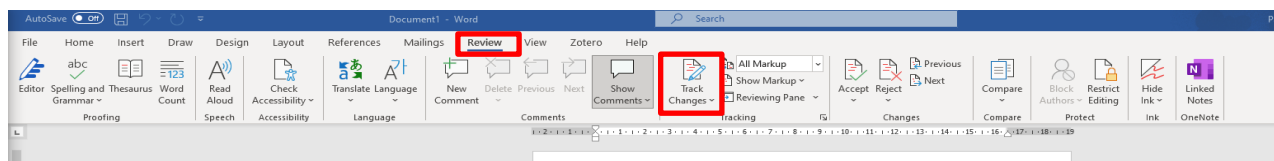
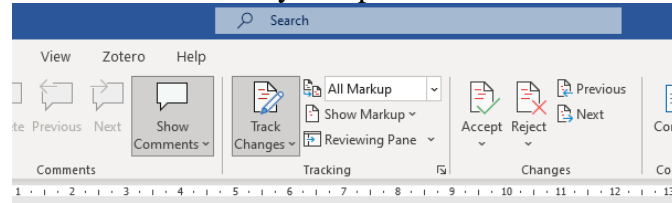


Figure 7 : Track changes

- Now **make an edit** to the document by deleting a few words from a sentence and replacing it with a synonym of that word. You should recognise that the deleted word is struck with a red line and the word you replaced it with is red and underlined.



b. Skeletal System

nee joint consists of 4 bones, the femur, tibia, fibula and patella. The femur is a st and most voluminous bone in the human body. The medial and lateral cond nity is what articulates with the knee joint. The patella is a sesamoid bone tha at its medial and lateral facets. It also serves to protect the knee and increase t les of the quadriceps. The tibia and the fibula make up the lower leg. The tibia on its medial and lateral condyles [4].

nee joint consists of 3 sub-joints. The femoropatellar joint, the medial tibiofem l tibiofemoral joint. The tibiofemoral joints consist of the condyles of the femu enisci which are Connected~~attached~~ to the outer edges of tibial condyles. The ole purposes; to deepen the shallow articular surfaces of the tibia, to prevent s : femur and tibia to absorb shock being transmitted within the knee joint. The ree due to their weak attachment which is extremely painful. The condyles of t re interior side of the patella are covered in hyaline cartilage. The tibiofemoral joint used in flexion and extension of the knee. Structurally it is a bicondylar jo ccur when the knee is partially flexed and while extending the knee, but side-to ed in full extension [5].

femoropatellar joint is a plane joint where the patella glides across the distal en g flexion of the knee. There are three ligaments that connect the patella to the

Figure 8 : Making a correction

- Add a comment** for feedback on the change you just made. You can perform this task by highlighting the area in question, then right clicking to pull up the "New Comment" button.

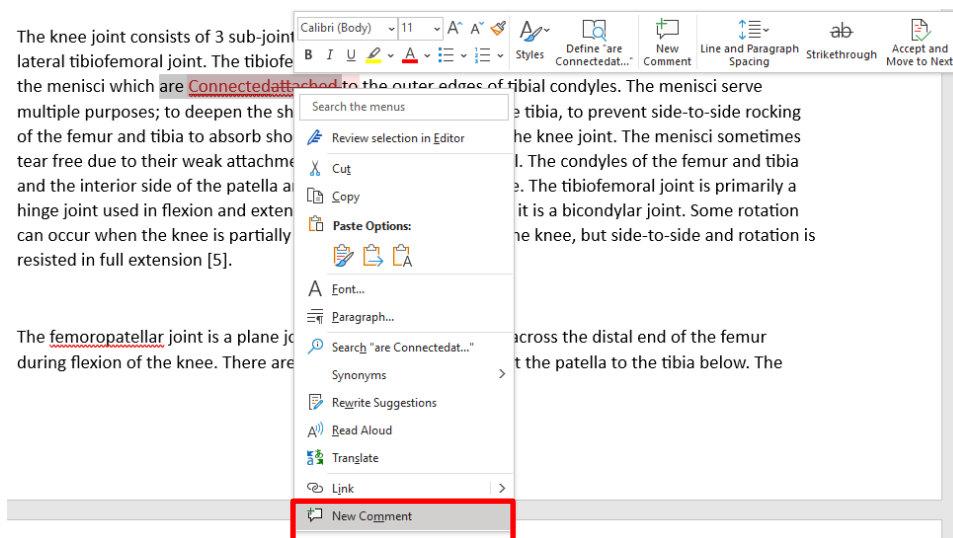


Figure 9 : Making a new comment

4. **Review changes** in the document by using the reviewing pane. This can be accessed via the Tracking tab in the review tab. This will bring up a pane on the right side of your screen to see all the modifications and comments made to the document in tracking mode.

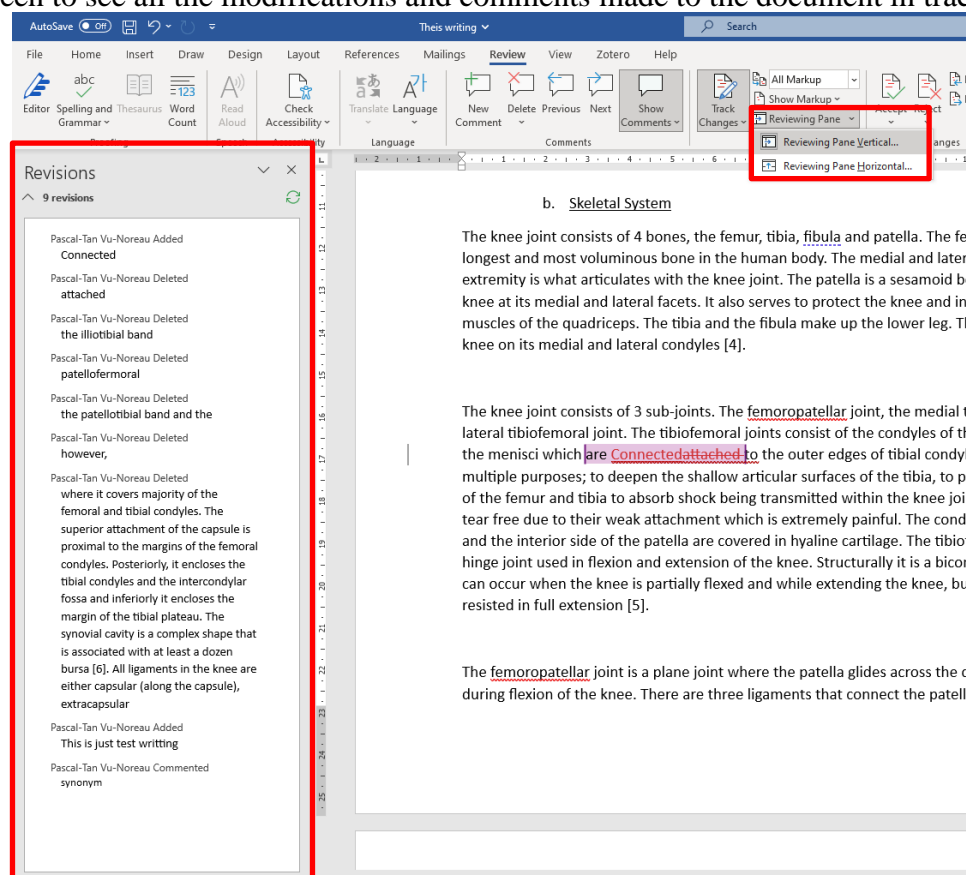


Figure 10 : Reviewing the changes in the reviewing pane

Part 6. Headers and Footers

Finally, we will create some header and footer information (adding some page numbers to the footer).

1. **Go** on the internet and **look for** how to create a header that says “Microsoft Lab” in all the pages and a footer that shows the numbering of the pages. The result should look like the figure below.



6. Conclusions et recommandations

The conclusions and recommendations must have *already* appeared in the main body. This is not a place to summarize the whole document though.

Figure 11 : Document header



Figure 12 : Document footer

Question 4. List all the steps you have taken to create the header and footer

Appendix I – Reviewing Documents

Review Mode in Microsoft Word is a feature that allows users to track and manage changes made to a document, provide feedback through comments, and collaborate with others during the editing and reviewing process. It provides a set of tools and functionalities specifically designed for collaborative writing, revision control, and receiving feedback.

In Review Mode, when enabled, any modifications, additions, or deletions made to the document are visually highlighted, allowing users to easily identify and differentiate the changes. These modifications can include text insertions, deletions, formatting changes, or any other edits made to the document.

- **Track Changes:** This feature tracks all modifications made to the document, displaying them with specific formatting, such as underlined or strikethrough text, and distinct colors for different users. It provides a clear visual indication of the changes made, making it easy to review and accept/reject them.

○ Review > Tracking > Track changes > For everyone

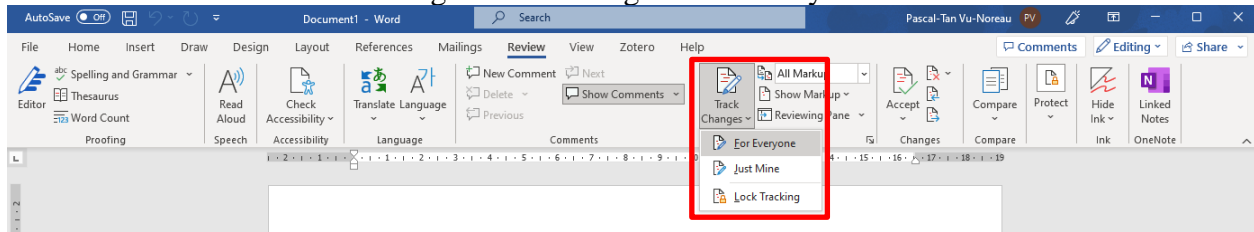


Figure 13 : Track changes mode in MS word

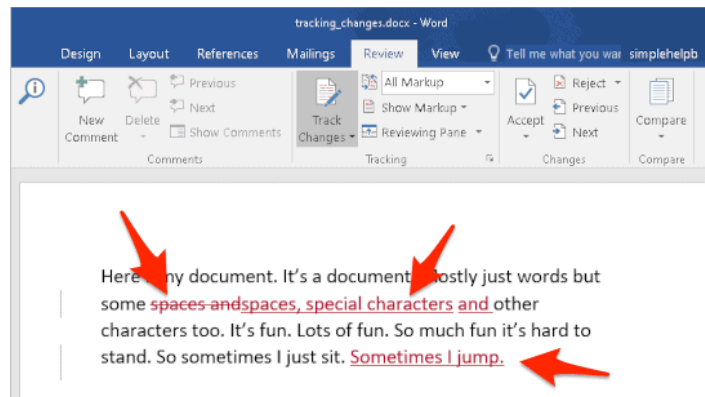


Figure 14 : Changes made in reviewing mode

- **Comments:** Users can insert comments directly into the document to provide feedback, ask questions, or make suggestions without altering the original content. Comments appear as speech bubbles in the margin, allowing for discussion and clarification during the editing process.
 - Review > comments > New comments

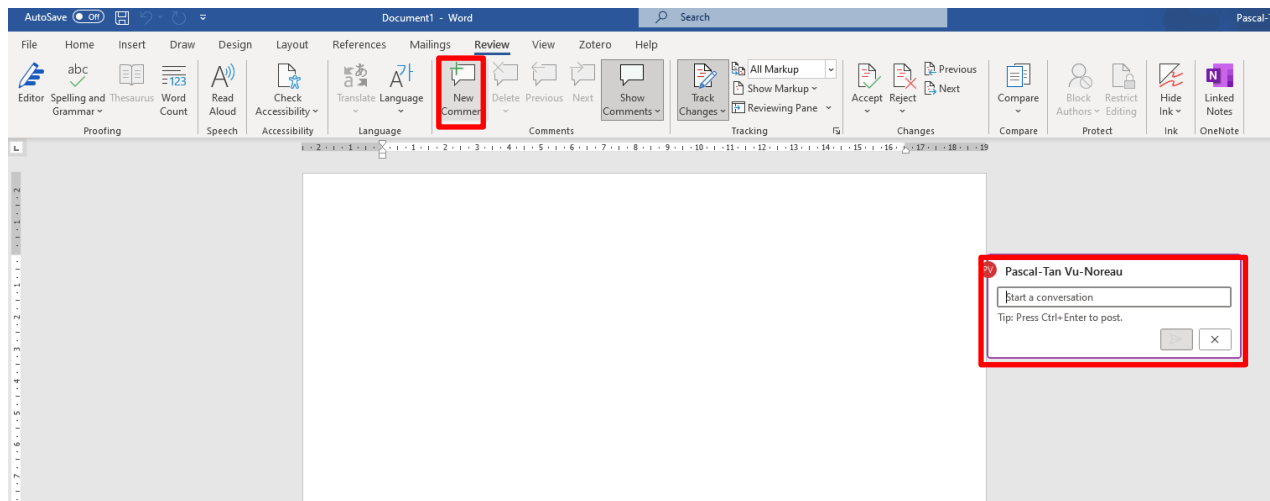


Figure 15 : Creating comments in Microsoft word

- **Reviewing Pane:** The Reviewing Pane provides a summary of all changes made to the document, including a list of modifications, comments, and their corresponding locations. It helps users navigate through the changes and comments, making it easier to address each one individually.

○ Review > Tracking > review pane

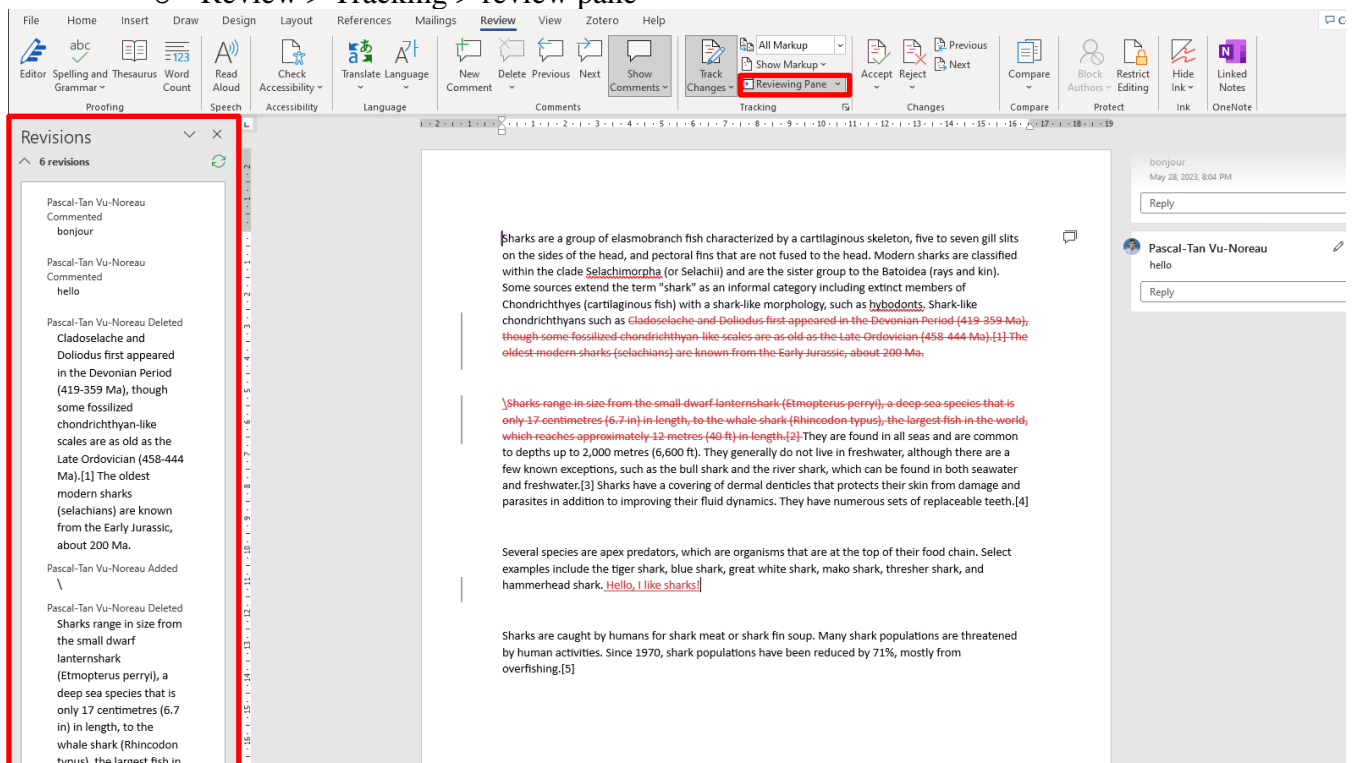


Figure 16 : Revision pane

- **Accept/Reject Changes:** Review Mode allows users to accept or reject individual changes made to the document. This gives users control over which modifications to incorporate into the final version of the document. Accepted changes become a part of the document, while rejected changes are removed, reverting the document back to its original state.

The screenshot shows the Microsoft Word interface with the Reviewing Pane open on the right. The Reviewing Pane displays a list of changes, including 'Accept' and 'Reject' buttons. The Revisions view is active, showing a list of changes on the left and the document text on the right. The text reads: 'Sharks are a group of elasmobranch fish characterized by a cartilaginous skeleton, five to seven gill slits on the sides of the head, and pectoral fins that are not fused to the head. Modern sharks are classified within the clade Selachimorpha (or Selachii) and are the sister group to the Batoidae (rays and kin). Some sources extend the term 'shark' as an informal category including extinct members of'.

Figure 17 : Accept/Reject Changes in Microsoft word

Review Mode in Microsoft Word is a valuable tool that offers several compelling reasons to utilize it. Firstly, it enables collaborative editing, allowing you to work seamlessly with others on the same document, making it ideal for group projects or receiving input from peers and instructors. Secondly, the ability to track changes ensures that modifications, additions, and deletions are visually highlighted, making it effortless to identify and review suggested revisions. Additionally, the commenting feature empowers you to provide and receive feedback directly within the document, fostering a streamlined communication channel for addressing specific points, seeking clarification, or suggesting improvements. The option to accept or reject changes individually gives you full control over the final version of your document, allowing you to incorporate valuable modifications while maintaining the integrity of your work. Ultimately, Review Mode streamlines the collaborative writing process, enhances the quality of your work through constructive feedback, and promotes a more efficient and organized approach to document editing.

Appendix II – General Advice

In general, you should use the automatic features in the word processor, rather than doing things manually. For example, don't type in carriage returns and extra spaces to line things up, when you can simply change the paragraph attributes for the whole document. This makes the final result more consistent and wastes less of your time.

If it seems like you are doing things slowly and laboriously and you feel like ‘there must be a better way of doing this’, then there is ***probably a better way of doing it!*** The internet is your friend. Strive to make your final document the best it can be, especially in terms of content, but also in terms of presentation quality! Don’t settle for shoddy quality, just because you don’t know how to do something. Instead, learn how to do it.

For that, the context-sensitive help is useful. If you are not sure about the use for a specific icon, hover your cursor over it and read the resulting help text. For example, in the diagram below, the cursor was hovered (left stationary for a few seconds) over the ‘centering’ icon, resulting in the help message shown. When you do this, the keyboard shortcut for the icon is also given by both tools.

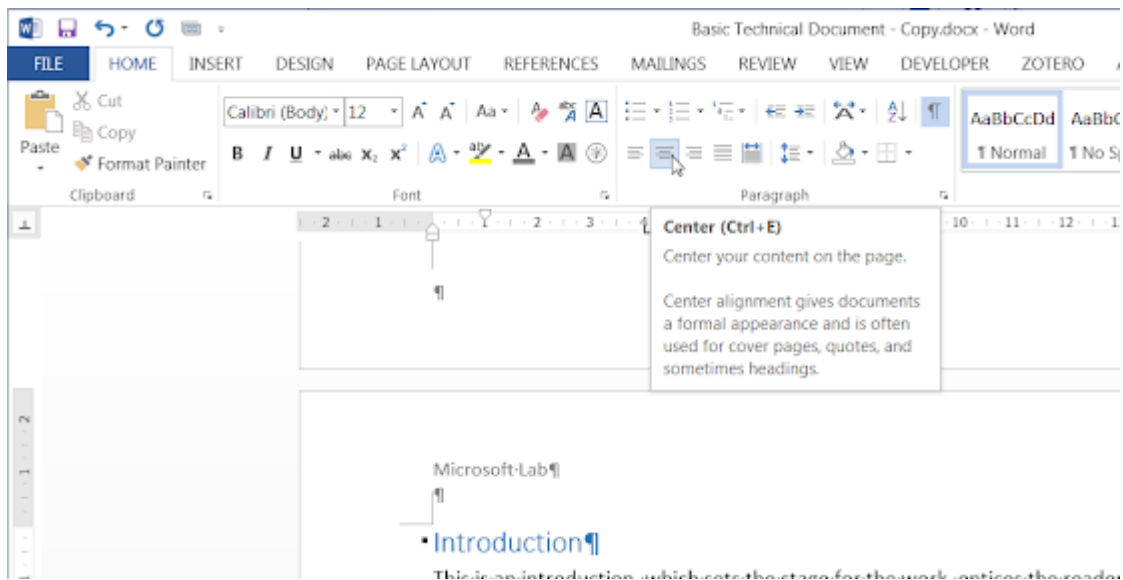


Figure 18 : Microsoft words alignment (Center)