University of South Australia

Tips for studying in the Sciences

If you have chosen to study in the Sciences, it is likely you have had some experience studying science subjects in high school or elsewhere. However, at university you will need to learn much more content at a much quicker speed: it's estimated that one week's content at university covers as much as four or five weeks' content at high school (Rhoden & Starkey 1998). This handout provides some tips and strategies to help you along.

Reading in the Sciences

Three aspects of scientific reading that students find challenging are

- **Vocabulary:** authors use specialised terminology and jargon and assume readers will be familiar with it.
- **Style:** scientific writing is highly formal and can contain long sentences with complicated structures.
- **Too much information:** large amounts of information are conveyed in scientific texts, often using diagrams, graphs etc.
  (Adapted from Strube, 1992, pp. 33–34)

Strategies you can apply to make this reading easier are

- **Know why you are reading and what you need to look for:** Don't just pick up your reading and plunge into it: think about the purpose of the reading, how it is relevant to that week's lecture content or workshop activities. This context will make it easier to engage with the material and guide you re: what you need to extract from it.
- **Pay attention to framing devices:** Pay attention to headings, sub-headings, words in bold, italics, or underlined. This helps to identify what's most important in the text. Also pay attention to topic sentences (the first sentence of each paragraph).
- **Summarise as you read:** Write short summaries in your own words once you get to the end of a page or section. If you need to refer back to information later on, it's easier doing this when it's written in your own words and reflects your understanding of the material
- **Check unfamiliar words:** You don't need to do this for every single word you don't recognise, as that would be time consuming, but if there are words that appear repeatedly or that you recognise from other readings, check what they mean and keep a record of these words in a notebook or word document.
  (Adapted from Strube, 1992, pp. 33–37)

When it comes to reading diagrams, graphs, charts, tables with statistics, and other methods of presenting information using visuals and numbers:

- **Learn how these things work:** Look at other examples of diagrams, graphs and charts and practice reading them. Getting to know how they typically work and convey information will make it easier for you to understand them when doing scientific reading.
- **Read surrounding information:** Pay close attention to the information around the diagram, graph, chart or table. This information will usually provide context for and explain the information provided, making it easier to understand the visual presentation.

Note-taking in lectures, workshops, practical and lab sessions

Lectures in the Sciences provide overviews of each week's key topics and content, while workshops, practicals and lab sessions provide opportunities to apply the knowledge you are learning from lectures and readings in activities and discussions. It is important to take notes in these settings as well as while you are reading.

In lectures:

- ***Before*** the lecture, skim that week's set reading materials or tutorial discussion points, so you know the scope of what will be covered and what to listen carefully for.
- Pay close attention to the start of the lecture, as the lecture purpose, key topics and themes will be signalled here.
- Develop abbreviations and shorthand to help you record information quickly and efficiently.
- If the lectures are recorded or lecture notes/slides are posted online, review these afterwards to ensure you have noted the key content.

In workshops, practicals and lab sessions:

- Focus on the activities and exercises as these are where you apply your knowledge: take notes where you can, but don't let it distract you from engaging with the content.
- Make notes ***after*** these classes of anything you did not write down that you think will be useful to remember later.

Remembering information

Reading and understanding comprise one part of the learning process: remembering is another. A key part of remembering is ***doing*** something with the information. Be active learners: don't just read information, do something with it, e.g., taking notes, mindmapping, talking to other students about it. The more you do something with the information, the easier it will be to remember it later.

The table below describes different aspects of memory, how they work, and strategies for making them work for you.

Aspect	How it works	How to do this
Interest	You remember information that you're interested in	Find things that interest you about the material or which may be applicable to your future work/career
Understanding	You remember information that you understand	Follow the tips provided above – summarising as you read, taking notes, defining unfamiliar words – to help you understand
Patterning	You remember information when you can see patterns in it	Find patterns in the material – rhymes, alliteration, trends and motifs – to help arrange the information into patterns you will remember
Linking	You can remember information when you can link it to other information	Find ways to connect pieces of information together and think about how this knowledge can be applied in your future work/practice
Visualisation	You remember information you can visualise	Find ways to visualise information – e.g., through illustrations, mindmaps, finding visual equivalents – so you can recall these images later

Adapted from Rhoden & Starkey (1998, p. 36).

Writing in the Sciences

Your written assignments in the Sciences should be similar in style to the texts you are reading. There may be templates for different assignments that need to be followed closely. If you are unsure, refer to the assignment instructions. Here are some tips to keep in mind:

- Write in third person rather than first person
    - i.e., 'Bandages were applied to the wound', not 'I applied bandages to the wound'
- Use vocabulary and terminology specific to your field
- Apply evidence-based practice processes in your research: select evidence that is appropriate, has been located through systematic search, and has been critically appraised
- Ensure claims are supported by evidence and data is presented accurately
- Remove unnecessary words and don't over-use qualifying words, e.g., nearly, partly, around, somewhat

References

Rhoden, S., & Starkey, R. (1998). *Studying science at university: Everything you need to know.* Allen & Unwin.

Strube, P. (1992). *Studying science and maths for nursing students.* University of South Australia.