



Research Methods in Science in Engineering

Literature Searching & Reading

Slide 1

Outline

- Getting started in a topic
- Searching the literature
- Reading the literature

Getting Started on a Topic

Getting Started in a Topic

Journal articles are probably not the best place to get started learning a new topic. They are difficult to read and rarely devote much effort to introducing the subject area.



Getting Started in a Topic

Try the following resources to get better introductory and background material:

- Textbooks
- M.S. theses
- Ph.D. dissertations
- Websites (Wikipedia, etc.)
- Review articles
- Personal conversations

Searching the Literature

Starting the Search

- Sometimes, getting started is the most difficult, especially for new and obscure topics.
- Identify the key words.
- Do whatever you can to find that first item from the literature. Lean on that to find more.

Identify Sources & Databases

- UTEP Library Search
<https://www.utep.edu/library/research/library-search.html>
- IEEE Xplore
<https://ieeexplore.ieee.org/Xplore/home.jsp>
- Google Scholar
<https://scholar.google.com/>
- APS Physics Journals
<https://journals.aps.org/>
- Optica
<https://www.osapublishing.org/>
- SPIE Digital Library
<https://www.spiedigitallibrary.org/>

Consider Searching in Waves

- Wave 1
 - Pick a topic and/or question(s).
 - Download everything relevant that you can find.
 - Read what you have found and take notes.
- Wave 2
 - Refine your topic and/or question(s).
 - Download everything relevant that you can find.
 - Read what you have found and take notes.
- Repeat until you cannot find any new information.

Obtaining Items from the Literature

- Most modern items in the literature are available as PDF.
- Use UTEP library to obtain textbooks, journal articles, etc., that you cannot access online.

Stay Organized!

- Organize your PDFs
- Take notes and make maps of subjects

Reading a Journal Article

Why are Journal Articles Hard to Read?

- They are boring
- They are dense and complicated.
- Many concepts are presented but not explained.
- Very limited introductory material.
- Bad writing.
- You have not been taught how to read an article.

How to Read a Journal Article

1. **Read the abstract** – Usually uses the simplest language and is specifically intended to give you all the information you need to determine if the article is what you are looking for.
2. **Scan the article** – Get an idea of the value of the paper by looking at diagrams, equations, section headings, etc.
3. **Stop reading if article does not make sense** – Skip the most difficult articles when starting your search. Save them for later.
4. **Read the introduction** – This is the most valuable when starting a literature search. Identify relevant literature sources cited by the paper.
5. **Read the conclusion** – The key results and new information of the paper are summarized here. If not new or not interesting, stop here.
6. **Read the rest of the article** – Read the methods and body of the article only if it is relevant to your research and the paper is worthy of your attention.
7. **Take notes** – Consider importing PDFs into a tool like OneNote so you can highlight, add notes and comments, etc.