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Emerging Computing Models and Technologies

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ECE 510/610
Grad School Essentials

Portland State
UNIVERSITY

ECE 510/610
Grad School Essentials: A Crash Course in Scholarly Skills I

Module	Learning outcomes	Assignment
1 **Tools**	Capable of using research tools; Managing research projects; How to act and research in graduate school.	Write a 1-2 pager where you answer there following questions: (1) Are you an M.S. thesis or PhD student? (2) Who is your thesis advisor? (3) Why are you taking this course? (4) What do you hope to get out of this course? (5) What research topic(s) and question(s) are you most passionate about? (6) What do you know about the current state of your research field? What are open questions, unsolved problems, and challenges that need to be addressed? (7) Why do the research questions you are interested in matter? Who will benefit from them?
2 **Plagiarism**	Capable of recognizing and avoiding plagiarism; Understanding ethical and moral considerations and obligations in research.	Complete Indiana University plagiarism test.
3 **Interactive reading**	Capable of reading texts and taking notes.	Pick a paper, read it and take notes using Single's "interactive reading and note taking" approach.
4 **Literature search**	Capable of using Google Scholar; Capable of using the PSU library catalog; Capable of using Web of Science; Capable of using a citation tool, such as Zotero or Mendeley; Capable of searching for relevant literature.	Perform a literature search.
5 **Choosing and planning a research project**	Capable of choosing and planning a research project; Choosing an advisor; From topics to questions.	Answer the Heilmeier questions.
6 **Citing sources**	Capable of incorporating and citing sources; Generate a complete and properly formatted bibliography in IEEE format.	Generate in-text citations and a bibliography in IEEE format for 4 selected papers.
7 **Literature review**	Capable of writing a literature review.	Write a literature review of 5 selected papers. Use tables, maps, citation graphs, author graphs, or concept graphs to organize the materials.
8 **Focus statement**	Capable of writing a focus statement.	Write a clear, concise, and compelling focus statement (2-4 sentences).
9 **One-page outline**	Capable of writing a one-page outline.	Write a one-page outline with the focus statement and chapter/section skeletons.
10 **Long outline**	Capable of writing a long outline with references.	Write a long outline with focus statements for each chapter and citable sources.

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Module	Learning outcomes	Assignment
11 **The writing process**	Capable of developing a regular writing routine; Getting started; Understanding the writing process (write to understand, write to be understood); Organize your writing; How to overcome writer's block; Freewriting	Create zero drafts.
12 **Technical writing**	Understand what technical writing is; Understand writing in engineering. Good rules for technical writing; from zero to first draft	Create first drafts from zero drafts.
13 **Research presentation**	Capable of delivering a research presentation.	Give a 5min Ignite-style research presentation (20 slides, 15s auto-advance).
14 **Introduction, background, related work**	Capable of writing an introduction, the background, and related work section.	Write an introduction, background, and related work section.
15 **Visualizations**	Capable of creating powerful figures and visualizations.	Create a visualization.
16 **Methods**	Capable of writing about the methods.	Write a methods section.
17 **Results**	Capable of writing about results.	Write a results section.
18 **Discussion and conclusion**	Capable of writing a discussion and conclusion section.	Write a discussion and conclusion.
19 **Abstract and title**	Capable of writing an abstract; Capable of writing a great title.	Write an abstract, find a title.
20 **Revising and editing**	Capable of revising and editing.	Revise and edit the current draft (for style, for flow, from comments).

Resources

In no particular order. Links are clickable.

- Machi & McEvoy, The literature review
- Umerto Eco, How to write a thesis
- Peg Boyle Single, Demystifying dissertation writing
- W. C. Booth et al., The craft of research
- Joan Bolker, Writing your dissertation in fifteen minutes a day
- Steven Pinker, A sense of style
- Zachary Shore, Grad school essentials
- Gerald Graff & Cathy Birkenstein, They say, I say

- Anne Janzer, [Writing to be understood](#)
- Gary Blake & Robery W. Bly, [The elements of technical writing](#)
- Justin Zobel, [Writing for computer science](#)
- Lyn Dupre, [Bugs in writing](#)
- Robert Irish, [Writing in engineering](#)
- Hilary Glasman-Deal, [Science research writing for non-native speakers of English](#)
- Patrick Henry Winston, [Make it clear](#)
- Leong, Heah, & Ong, [Guide to Research Projects for Engineering Students: Planning, Writing and Presenting](#)