17-679: Thesis Writing for Industrial Software Research

[W 5:00-6:20pm]
[Summer 2025, 6 Units]

Instructor	Email	Office Location and Hours
Dr. Bradley Schmerl	schmerl@cs.cmu.edu	M: 5-6:30, F: 10-12 by appointment. Other times by request.

Introduction. Expository writing is used to present facts in a manner that supports a thesis. Successful thesis writing frequently requires identifying the audience, identifying and assessing facts for their relevancy and credibility to the thesis, and ensuring that conclusions are scoped and directly follow from facts. This course will introduce students to the software engineering thesis writing process with a specific focus on reflective practice. Students will work to identify a thesis topic based on their experience and interests, they will conduct a literature review to identify related work, will engage in reflective writing and learn to critique this writing. This course is for students enrolled in the Masters of Software Engineering program who are completing a thesis option.

Learning Objectives. After completing this course, you will be able to:

- Identify and technically describe industrial problem, who is the audience, what are issues related to this problem
- Contextualize what others have done to solve the problem, evaluate those solutions, and reflect on why the solutions work or do not work
- Propose methods, solutions or a pathway forward that is supported by evidence, which consists of evidence of the problem and existing solutions

Assessments. Students learn more by applying and explaining ideas to others, thus, the course requires the following activities:

- **Homework assignments**, including individual and group work to help you focus on important points in the readings and to exercise particular skills
- **Class participation**, to enrich the discussion with your insight, relevant experience, critical questions, and analysis of the material. The quality of contribution is more important than the quantity.
- **Thesis Submission**, to demonstrate your cumulative knowledge on practical examples.

Assessment	Final Grade %

Grade	Percentage Interval

Homework assignments and participation	20%
Thesis Document	70%
Thesis Presentation	10%

A	90-100%
B	80-89%
C	70-79%
D	60-69%
R (F)	59% or below

Course and Grading Policies

- **Late-work policy**: All work is expected to be handed in at the indicated due date and time. Because in-class activities will use peer grading to build on individual student work, it is imperative that students submit their assignments by the deadline. In the first week of classes, you should receive your course schedules; please use those to plan ahead.
- **Participation policy**. Class participation will be graded by in-class engagement, including asking relevant questions and engaging in peer review of other student work. The lack of attendance, and the use of mobile devices, including phones and laptops, for non-classroom purposes will count against your participation grade.

Learning Disabilities. If you have a documented learning disability, please notify the instructor during the first week of class.

Academic Integrity. Honesty and transparency are important to good scholarship. Plagiarism and cheating, however, are serious academic offenses with serious consequences. If you are discovered engaging in either behavior in this course, you will earn a failing grade on the assignment in question, and further disciplinary action may be taken. For a clear description of what counts as plagiarism, cheating, and/or the use of unauthorized sources, please see the University's Policy on Academic Integrity.

If you have any questions regarding plagiarism or cheating, please ask the instructor as soon as possible to avoid any misunderstandings.

Note on Use of Generative AI: This is a writing course that is intended for you to develop and explain your own ideas. Therefore using Generative AI to create text from scratch is

prohibited. On the other hand, using Generative AI to help reword your existing text, fix errors, and so on are allowed, as long as you provide an appendix stating the sections where this was applied, and the original text submitted.

Student Wellness. As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. CMU services are available, and treatment does work. You can learn more about confidential mental health services available on campus at: http://www.cmu.edu/counseling/. Support is always available (24/7) from Counseling and Psychological Services: 412-268-2922

Course Schedule

The following schedule provides a general overview of topics and assignments. Please refer to the syllabus online in Canvas for specific lecture topics, reading assignments and due dates.

Class	Date	Module	Topics	Readings and Assignments
1	8/27	Argument Development and Research Plan	Course overview & Toulmin's model	Reading: [HK03] A0: Proposal (Due before class)
2	9/3		Claims & Problem Statements	A1: Refined Problem Statement
3	9/10		Evidence & Data	A2: Evidence and Data
4	9/17		Warrants & Context	A3: Warrants and Context
5	9/24		Counterarguments & Rebuttals	A4: Counterarguments & Rebuttals
6	10/1	Positioning, Structure, and Literature	Giving Effective Peer Feedback	
7	10/8		Structuring an Industrial Thesis	A5: Toulmin Self-Assessment
	10/15		**NO CLASS - FALL BREAK**	
8	10/22		Related Work and Literature Survey	A6: Literature Synthesis & Backing Integration
9	10/29	Writing the Thesis	Writing Introduction & Background	A7: Introduction and Background
10	11/5		Writing Methods & Results	A8: Methods and Results

11	11/12		Writing Discussion & Impact	A9: Discussion and Impact
12	11/19		Writing Abstract + Visual Communication & Slide Design	
			NO CLASS - THANKSGIVING	
13	12/3		Final Presentations	Thesis Presentation
	12/10			Thesis Submission

[HK03] Hegelund, S., Kock, C. (2003). A Good Paper Makes a Case: Teaching Academic Writing the Macro-Toulmin Way. In: Björk, L., Bräuer, G., Rienecker, L., Jörgensen, P.S. (eds) Teaching Academic Writing in European Higher Education. Studies in Writing, vol 12. Springer, Dordrecht. https://doi.org/10.1007/0-306-48195-2_6