

Fulbright University Vietnam

Computer Science

Capstone Handbook

As of January 2025

Computer Science Capstone Handbook

2025-

1. What is a capstone in Computer Science?	1
2. Eligibility criteria	1
3. Group projects	2
3. Allocation of advisor process	2
4. Advising process	2
5. IRB Approval.....	3
6. Academic Integrity	3
7. Capstone I	3
8. Capstone II	4
9. Thesis guidelines.....	4
9.1. Word count.....	4
9.2. Style and Formatting	4
10. Thesis submission.....	5
11. Formal presentation requirement.....	5
12. Grading process.....	5

1. What is a capstone in Computer Science?

According to university-wide policy, the capstone is a culmination to the student's curriculum to demonstrate the principal learning outcomes and competencies of that curriculum in a meaningful and coherent way. In the Computer Science major, the capstone is an **individual project** and can take only the form of a written thesis. The capstone should demonstrate original critical and creative thinking, and we encourage primary research. You should think very carefully about an appropriate scope of research and production for your proposed capstone. **Keep in mind that projects for which there is no current faculty expertise may not be approved.** It is important for you to consult early on with your potential advisor to ensure the match. Applications which do not demonstrate awareness of the scope and the practicalities needed to realize the capstone may not be approved.

Learning Outcomes

Students who complete the Capstone will be able to:

1. Demonstrate a strong mastery of technical knowledge and skills in computer science
2. Demonstrate the ability to review the literature and analyze the knowledge gap or the tool need to form the research question
3. Demonstrate ability to apply theoretical knowledge to address practical challenges
4. Demonstrate ability to analyze and present the result

Mapping to Major Learning Outcomes

	MLO1	MLO2	MLO3
CLO1	x	x	
CLO2		x	
CLO3			x
CLO4		x	

2. Eligibility criteria

To be eligible to apply for the capstone in Computer Science, you must meet the following criteria:

- Major GPA: 3.5 (No exception)

Capstone applicants will be assessed by the major faculty based on the eligibility criteria and the quality of the proposal.

NOTE: *Successful capstone applicants must maintain a 3.5 GPA throughout their senior year to be able to earn an Honors for the capstone. Failure to maintain the required GPA will result in the capstone being capped at Pass.*

3. Group projects

There is no group project. If two or more students working on the same topic then students should discuss with their advisor to ensure there is no overlap or competition.

3. Allocation of advisor process

Successful applicants will be matched to their first choice of primary and secondary advisor where possible. If the student's first or second preference cannot be accommodated due to the necessity of maintaining a fair distribution of faculty workload, the major capstone coordinator will consult with the student to determine an appropriate solution.

4. Advising process

The primary advisor is your first point of contact, and should hold expertise relevant to your project, for example, in terms of being a specialist in the project's disciplinary field. The primary advisor will be the primary reviewer of your work in progress, and as such, will be the person with whom you meet most frequently.

The secondary advisor can offer you additional feedback where necessary and may represent a disciplinary field outside of Computer Science (if your project is interdisciplinary). In some cases where the primary advisor is unable to continue, the secondary advisor will assume their role.

You should plan to meet with your primary advisor **at least once a month** during the semester, if not more often. **You are expected to initiate these meetings with your advisors.** The capstone places responsibility on you to be organized and to be responsible in regular communications and submission of work-in-progression to your primary and secondary advisors. **Failure to do this might lead to a "Fail".**

REMEMBER:

- ✓ *Respect your advisors' working hours*
- ✓ *Correspond professionally and courteously*
- ✓ *Use Fulbright email, no social media platforms*
- ✓ *Respect your advisors' time*
- ✓ *Be prepared at meetings (with materials, questions) and use your time efficiently*
- ✓ *You are responsible for setting up the meetings (and showing up!)*
- ✓ *Expect meetings to be about 30 minutes*

OTHER EXPECTATIONS:

- You cannot change your topic without consulting your advisors and getting their approval
- We expect you to demonstrate a steady work ethic, self-organization, and management of your capstone workload with your other coursework
- You need to communicate challenges and questions
- Try to keep up with your timeline
- Manage your expectations in terms of what you can accomplish

5. IRB Approval

If your project requires working with human subjects through processes that include, but are not limited to, in-person or online interviews, direct or indirect observations, opinion surveys, etc., you will be responsible for obtaining approval from Fulbright University Vietnam's Institutional Review Board (IRB). The IRB approval process involves taking an online module to learn about IRB procedures, as well as submitting an application detailing your research design and plan for data protection.

Students must obtain IRB approval **before** the period of their Fulbright-affiliated research. Failure to do so would result in delays to the project and/or its suspension. For this research, Art & Media Studies students are advised to begin their IRB application as soon as their Capstone application is accepted, or during Capstone I at the latest.

More information on the IRB approval process can be found at <https://fulbright.edu.vn/irb/>

6. Academic Integrity

The capstone is subject to the regulations described in Fulbright University Vietnam's Code of Academic Integrity.

7. Capstone I

In Capstone I you will actively conduct research and refine your project proposal and plan. You will focus on gathering and organizing your information or other materials needed to realize your project. In some cases, students may begin the very initial stages of production (subject to your advisors' approval).

What you might be expected to submit for Capstone I:

Midterm submission(s):

- revised project proposal
- workplan

End-of-term submission (very likely a combination of some of the following):

- A literature review or annotated bibliography
- A prototype or some initial results
- Workplan for Capstone II
- Or other materials to be decided on in consultation with your advisors

8. Capstone II

In Capstone II you will focus more on production, whether it be developing a computational method, developing a tool, developing a computational model, creating a new dataset, or designing a benchmark. You might continue to do some research or information gathering, but this should taper off early in the semester so that you can focus on producing your final submission.

In Capstone II you will also be required to formally present your work in a defense session.

What you might be expected to submit for Capstone II:

Midterm submission(s):

- Drafts of chapters
- Or documentation of work-in-progress of the project

End-of-term submission:

- A revised and professionally presented written thesis

9. Thesis guidelines

9.1. Word count

There is no word count limit. However, typically, undergraduate theses are often limited to 30 - 60 pages, including tables, images, and full bibliography. You are encouraged to write your thesis in LaTeX.

9.2. Style and Formatting

Fonts size: 11pt or 12pt.

Line spacing: The text should be double-spaced.

Sequence of Thesis Materials: The thesis is in the following order:

- A. Title Page. The title page should include the title of the thesis, your name, the date of submission, and your advisor's name. Include this statement on the lower third of the page:

A thesis submitted to partially fulfill the requirements for the degree of Bachelor of Science in Computer Science

- B. Acknowledgment(s) page. Optional. Double-spaced.
- C. Table of Contents. A consecutive listing of chapters or major headings with page numbers; also include the page number for the additional sections (illustrations, the appendix (if included), and the bibliography. Double space between these elements.
- D. List of Tables (as necessary), with titles and page references.
- E. List of Illustrations, with titles and page references.
- F. Acronym
- G. Text
- H. References
- I. Appendices (optional)

Notes:

1. The preliminary pages (sections A-F above) should be paginated using small Roman numerals (i, ii, iii, iv, v, and so on). These may be placed at the bottom of the page. The title page counts as page i, but do not print a page number on this page. Begin the pagination with the next page (acknowledgments page, if you have one, or the table of contents).
2. Use Arabic numerals for these pages, starting with page 1 as the first page of the text.
3. Illustrations (figures or tables) should be neatly prepared, the caption should convey the key content of the illustration.
4. Bibliography items and the citations should be formatted consistently using one of common formats such as ACM, IEEE, AMS, or Chicago.

10. Thesis submission

The student must submit the final thesis version to the committee at least one week before the defense date.

11. Formal presentation requirement

The student are required to present a formal 30-minute presentation following by a 15-minute Q&A session on the defense date. You are expected to attend the entire defense session and to engage with the presentations of your classmates.

12. Grading process

The capstone is graded by the committee including all fulltime faculty members in which **60% is given by the primary advisor and 40% is given by all other committee members**. Committee members will evaluate the capstone using the rubric in the evaluation form below

EVALUATION CRITERIA	SCORE RANGE	SCORE	COMMENTS

1. OVERALL WORKLOAD & EFFORT			
The total thesis workload is equivalent to 280 working hours of a senior undergraduate student. (MLO1, MLO3)	0 - 20		
2. NOVELTY			
(2a) The thesis demonstrates creative or/and innovative thinking in finding the need, reviewing the literature, and framing the goals of the thesis. (MLO2)	0 - 10		
(2b) The thesis develops a new computational method, proposes a new design, develops a new model, or constructs a new dataset. (MLO3)	0 - 10		
3. SIGNIFICANCE			
(3a) The thesis demonstrates the results are complete and ready to use broadly. (MLO3)	0 - 15		
(3b) The thesis demonstrates that the results can compete with the state-of-the-art solutions. (MLO2, MLO3)	0 - 20		
4. ORAL PRESENTATION			
(4a) The presentation is clearly and logically, with smooth and effective transitions. (MLO3)	0 - 5		
(4b) The student answers all the questions clearly and correctly. (MLO3)	0 - 5		
5. THESIS WRITING QUALITY			
(5a) The thesis is clearly and logically structured so that the readers can understand easily without much effort. (MLO3)	0 - 10		

(5b) The thesis is appropriately formatted for academic submission (i.e. no typos, no spelling or grammar errors, no low-quality images, no formatting inconsistencies, etc). (MLO3)	0 - 5		
TOTAL SCORE	0 - 100		

Grade Scale

Honor: 100% to 90.0%

Pass: < 90.0% to 60.0%

Fail: < 60.0%

Computer Science Major Learning Outcomes

[MLO1] Demonstrate proficiency in foundational areas of computer science by illustrating core concepts, comparing methods, analyzing and solving problems in theory, systems, applications.

[MLO2] Explain emerging aspects of the computer science discipline (e.g., artificial intelligence, machine learning, data science, business analytics, digital media, etc.)

[MLO3] Develop real-world applications by using knowledge of computer science and other disciplines to create a portfolio of tangible projects (e.g., software systems and frameworks, mobile apps, data pipeline, etc.)