Teaching Dossier

Sathaporn "Hubert" Hu

Part-Time Faculty and Incoming Assistant
Professor, Algoma University

Table of Contents

Teaching Statement

As someone who has experience teaching courses that are taken by senior undergraduate students and new graduate students, I have a unique perspective on students. Some of my students were looking to graduate while some were quite new and lacked familiarity with the new landscape. I developed my teaching philosophy based on this perspective. My teaching philosophy has four main values: encouraging questions, stewardship, continuous learning, and providing examples.

In my experience as a university student, I often find undergraduate computer science students are discouraged from asking questions. Instead, a student should solely rely on themselves to solve the problems. However, in the real world and when performing research, questions must be asked and external answers must be sought. An individual alone cannot be expected to solve or know everything. Therefore, where possible, I want to encourage students to not just ask questions, but to perform effective literature review.

Because I have experience teaching new students, I played a role as the first checkpoint to the students' journeys. As the first checkpoint, I find myself playing a pivotal role in their future. Therefore, stewardship has become one of my teaching values. While I might not be able to affect all aspects of a student's life, at least, I hope to steer them in the right direction. I believe that some students who appear to be underperforming may simply need more guidance or assistance. By providing thoughtful advice and help, the students can move forward.

Students are not the only ones who need to learn – so do the instructors. In the field of computer science, technologies can progress extremely quickly. One particular example is artificial intelligence (AI). Earlier on, AI is simply an algorithm implemented through coding. However, today's AI is vastly different from the past one. It involves complex statistical techniques, or even simulating human cognition (e.g., through artificial neural networks). Therefore, instructors too must adapt to the new materials, and adjust their classes. Furthermore, instructors must also be learners because they are teaching others how to learn.

Providing examples is an extremely important value in my teaching. Without an example, students can view a concept as pointless. Without an example, a student does not why a concept is relevant and can be useful. When a student does not understand why a concept is relevant, they lack the motivation to understand it. In my teaching, I aim to link the exercise to real-world scenarios.

It is important to note that although I primarily taught new graduate students or senior undergraduate students, it does not mean that I dislike teaching students at other levels.

Teaching is not just a process where teachers stamp their knowledge onto students. While providing information is a part of teaching, it is not simply an "input-output" problem. With these four values, I believe that I am providing my students with an optimal learning experience.

Courses Taught

As a Lecturer

Data Structure I (COSC2006-001/002)
FALL 2024 | Algoma University (Sault Ste. Marie)

This is a second year class teaching students about the basics of data structure and recursion. The class emphasizes linear data structures such as lists, stacks, and queues.

Data Structure I (COSC2006)
SPRING 2024 | Algoma University (Sault Ste. Marie)

This is a second year class teaching students about the basics of data structure and recursion. The class emphasizes linear data structures such as lists, stacks, and queues.

Artificial Intelligence (COSC3117)
WINTER 2024 | Algoma University (Sault Ste. Marie)

This class provides an introduction to artificial intelligence.

Computer Software for Sciences (COSC2836)
WINTER 2024 | Algoma University (Sault Ste. Marie)

This class provides an introduction to software that scientists can use. In the class, Microsoft Excel, Tableau, R are covered.

Human-Computer Interaction #1 (CSCI 4169/6307)
WINTER 2022 | Dalhousie University (Studley)

This is a cross-listed graduate class where students learn about designing and researching within the field of human-computer interaction.

Research Methods and Statistics #2 (CSCI 6055)
SUMMER 2021 | Dalhousie University (Studley)

This is a graduate course introducing research methodology and statistics for the students. Due to the pandemic, this course was offered online. To improve the student's learning experience, I made this class synchronous instead.

Research Methods and Statistics #1 (CSCI 6055)
SUMMER 2020 | Dalhousie University (Studley)

This is a graduate course introducing research methodology and statistics for the students. Due to the pandemic, I was forced to teach this class online and I made this version asynchronous.

As a Teaching Assistant

Designing for UX #1 (CSCI 5601)
FALL 2022 | Dalhousie University (Studley)

This is a graduate class for the applied computer science program at Dalhousie University. It teaches students about designing a user experience. The target audience for this class is for those who want to work in the industries. I marked the assignments, and assisted students in their work. Due to a teaching assistant strike, my work was temporarily interrupted. However, once the strike was over, I helped the class to recover as quickly as possible.

Designing User Interfaces #1 (CSCI 3160)
WINTER 2021 | Dalhousie University (Studley)

This is an undergraduate course for students who want to specialize in the field of HCI. I advised students about their work and assisted the lecturer in handling the tutorials.

Science and Technology Innovation, Commercialization, and Entrepreneurship II #1 (SCIE 4702)
WINTER 2021 | Dalhousie University (Studley)

This is an upper-year undergraduate class in entrepreneurship and a continuation of SCIE 4701. I mentored several groups in their start-ups that they created as a part of their assignments.

Science and Technology Innovation, Commercialization, and Entrepreneurship I #1 (SCIE 4701)
FALL 2020 | Dalhousie University (Studley)

This is an upper-year undergraduate class in entrepreneurship. I mentored several groups in their start-ups that they created as a part of their assignments.

Usable Privacy and Security #1 (CSCI 4169/6307)
FALL 2019 | Dalhousie University (Studley)

This is a cross-listed graduate course where students learn how to incorporate principles of human-computer interaction to security and privacy. I assist students in their projects and mark their assignments.

Human-Computer Interaction #3 (CSCI 4163/6610)
FALL 2019 | Dalhousie University (Studley)

This is a cross-listed graduate course in Human-Computer Interaction. The students are taught how to prototype an app and evaluate their prototypes. I am currently a marker for this course.

Research Methods and Statistics #1 (CSCI 6055)
SUMMER 2019 | Dalhousie University (Studley)

This is a graduate course introducing research methodology and statistics for the students. I designed the statistics portion of the class and administered lectures on statistics to the students. I also assisted the instructor in designing the exams and invigilated the exams. I also marked the assignments and the exams. I became a teaching assistant for this course, because when I was a student of this course in 2018, I expressed such interest to the instructor. The instructor saw my passion for my statistics and believed that I would be an ideal for this course.

Human-Computer Interaction #2 (CSCI 4163/6610)
WINTER 2019 | Dalhousie University (Studley)

This is a cross-listed graduate course in Human-Computer Interaction. The students are taught how to prototype an app and evaluate their prototypes. I designed tutorial slides, led laboratory sessions, marked the assignments. I also invigilated one of the midterms for the class.

Human-Computer Interaction #1 (CSCI 4163/6610)
FALL 2018 | Dalhousie University (Studley)

This is a cross-listed graduate course in Human-Computer Interaction. The students are taught how to prototype an app and evaluate their prototypes. I designed tutorial slides, led laboratory sessions, marked the assignments.

Computer Science II #1 (CSCI 1101)
WINTER 2018 | Dalhousie University (Studley)

This is a first-year course in computer science at Dalhousie University. As a teaching assistant, I led laboratory sessions. In each session, I gave a short presentation on the material and provided support for the rest of the session. I also acted as a marker and an invigilator.

Introduction to Problem Solving using Application Software #1(CPSC 203)
FALL 2017 | University of Calgary

This is a first-year course in computer science at the University of Calgary. It is designed for non-specialists. I led tutorials for the class and provided support during the tutorials. I also marked the assignments for this class and invigilated the final exam.

Web-based System #2 (SENG 513)
WINTER 2017 | University of Calgary

This is a fourth-year course in computer science at the University of Calgary in web development. I designed the tutorial materials and provided guidance for the students.

Web-based System #1 (SENG 513)
WINTER 2016 | University of Calgary

This is a fourth-year course in computer science at the University of Calgary in web development. I designed the tutorial materials and conducted lab sections. I also marked the assignments.

Introduction to Computer Science for Multidisciplinary Studies I #1 (CPSC 217)
FALL 2015 | University of Calgary

This is a first-year course in computer science at the University of Calgary. I designed the lecture slides and conducted labs for the class. I marked assignments and exams. I also acted as an invigilator for this class.

Introduction to Programming #1 (CSC 108)
FALL 2013 | University of Toronto

This is a first-year course in computer science at the University of Toronto. Since this class used an "inverted" model, I attended the lectures along with the students and provided help with in-class activities. I also marked some assignments and the final exam.

As an Online Course Builder

When in-person learning was suspended at Dalhousie University during the COVID pandemic, students who completed the Certificate of University Teaching Learning program were hired by the university to transition in-person courses into online ones. These students had training with the university's eLearning system; as such, they are proficient in it.

As a student in the program, I was tasked with providing support to two courses.

Experimental Physics II (PHYC 3010)
WINTER 2021 | Dalhousie University

In this course, I assisted the lecturer in designing the online modules. I also assisted with designing online quizzes and questionnaires.

Experimental Physics I & Electronics (PHYC 3000 & PHYC 3340)
FALL 2020 | Dalhousie University

In this course, I assisted the lecturer in designing the online modules. I also assisted with designing online quizzes and questionnaires.

As a Volunteer Advisor

Mentor for Innis College Residence at the University of Toronto
FALL 2012 – WINTER 2013 | University of Toronto

During my second year at the University of Toronto, I became a student mentor for first-year students at the residence. I advised the students of how to navigate the first-year courses in computer science. Additionally, I also provided tips and how-to to the students so they could have the best experience. I was selected one of the Best Mentors.

Efforts to Improve Teaching

Certificate in University of Teaching and Learning

I was in the program, "Certificate in University of Teaching and Learning." The program contains multiple modules designed to prepare graduate students to become better teaching assistants and instructors. The course has four components for the students who wish to complete the program:

1. **Course:** Students in this program are required to attend a one-semester course on teaching and learning in a university.
2. **Observation:** Students are required to be observed by a colleague or an instructor for three times.

3. **Workshop:** Students are required to attend at least 20 hours of workshops on teaching.
4. **Dossier:** Students are required to complete a teaching dossier.

Course Modifications

Data Structure I #1 and #2 (COSC2006)

I added a component on automata theory (e.g. Turing machine) so that students can get some head start on theoretical computer science in the third and the fourth year. Furthermore, I also emphasized the understanding of pseudocode so students can better adapt to other languages other than Java – the main programming language at Algoma University

Human-Computer Interaction #1 (CSCI 4169/6307)

I added a quantitative component to the course. Previously, the course was taught with minimal quantitative statistics. I think the lack of quantitative analysis can make students less prepared to deal with various types of data that they may encounter in their work or in their research.

Research Methods and Statistics #2 (CSCI 6055)

Taking student feedback into account and due to the fact that most students had adapted to the pandemic, I made this class synchronous online. By making the class synchronous, I was able to better engage with the students and thereby, improving their learning experience.

Research Methods and Statistics #1 (CSCI 6055)

I redesigned the statistics portion of this course, because I find it to be outdated. Introductory courses in statistics, such as this one, emphasize on Null-hypothesis Significance Testing (NHST). However, with NHST becoming increasingly scrutinized by various communities, students may find their knowledge to be outdated in the near future. The most significant redesign is the increased emphasis on confidence interval, effect size, and nonparametric statistics. I also included a lesson that outlines the criticism of NHST. Although I de-emphasized p-value in the class, I did not eliminate it. Since many researchers still use p-values and many academic articles still display them, students are still required to know it to some degree. Additionally, I also would like the students to develop some understanding of the "machinery" of statistics. Therefore, I also occasionally provided a deep-dive into the theories themselves. For example, I described in detail how the sign-test works – starting from binomial distribution to transforming the data into the distribution.

Furthermore, due to the pandemic, I designed the course to be an asynchronous online class. The asynchronous design allowed international students who were not in Canada to be able to participate.

Development of Teaching Materials

Artificial Intelligence #1 (COSC 3117)

I found that the students at Algoma University tended to have very different backgrounds from when I was studying as an undergraduate student. The students at Algoma University had a strong background in data structure but had less familiarity with the concept of probabilities. Therefore, I modified the structure to address

the gap. Furthermore, I am adding essay and cognitive science components to this course to teach students how to think critically about artificial intelligence. This makes my course less standard than other courses. However, I believe the ability to think critically about artificial intelligence is important, given the ever-increasing proliferation of artificial intelligence in day-to-day life.

Computer Software for Sciences #1 (COSC 2836)

Despite the course being geared towards those without programming experience, the students in this class already had some familiarity with Java. Therefore, I added data science components to make the course more worthwhile. For instance, the students were also taught how to use Tableau. In order to reduce the financial burden on the students, the course primarily used R and other software that the students could use for free. Furthermore, I highlighted the differences between R and Java, the standard language at Algoma University and the language that the students would be most familiar with. By emphasizing the differences between the languages, the students can become better programmers.

Research Methods and Statistics #1 (CSCI 6055)

Developing the materials for this class was extremely challenging, because most of the existing materials were still oriented toward NHST. Therefore, I spent much of my time trying to develop a deeper understanding of confidence interval, and effect size. To be able to explain the material in the most minute detail to the student, I also read advanced papers. For example, I read a paper on how to create a distribution for Wilcoxon Signed-Rank Test even though it was not necessary for me to explain to the students how to generate it.

Information from Colleagues

Artificial Intelligence (COSC 3117, Winter 2024)

All part-time faculties at Algoma University must receive a performance evaluation. In an evaluation, two full-time professors would attend a single class and evaluated the lecturer's performance. My teaching performance was evaluated by Prof. Rashid Khokhar and Prof. Yi Feng on April 8th, 2024. The class topic was convolutional neural networks which was the most difficult class for COSC3117.

Overall, Prof. Khokhar deemed my teaching performance as satisfactory (3 out of 5). He stated that:

> [I] demonstrated a satisfactory grasp of subject matters, and [communicated] key concepts clearly.

However, he also added that I should also use more examples.

Prof. Yi Feng commented that overall, my performance was good (4 out of 5). She commented that:

> [I] performed well and explained difficult concepts clearly to the students. The ROFR is recommended [to me].

ROFR or the Right of the First Refusal is the right for an instructor to re-teach the course if it is re-offered in the future. It is usually given to part-time instructors who have successfully gone through an evaluation process.

Computer Software for Sciences (COSC 2836, Winter 2024)

Similarly to COSC3117, I was also evaluated for my performance in COSC 3117. However, I did not receive a full feedback document. This was likely due to an administrative error from the university. Nevertheless, the incomplete document indicates that I should still receive ROFR for the course.

Research Methods and Statistics #1 (CSCI 6055, Summer 2020)

While I was a teaching assistant for this class, I also requested the instructor (Prof. Kirstie Hawkey) to observe three tutorials. At the end of each observation, she provided written feedback for (1) my content and presentation style, (2) my major strengths demonstrated in the class, and (3) suggestions for improvement. Overall, the feedback suggests that I offered high-quality teaching to my students.

First Observation: Confidence Interval

I received the following overall feedback for the first tutorial in term of content and style:

> The quiz towards the end of class gave students a good sense of their understanding of the knowledge [and] their gaps. Very good review of quiz after they turned it in.

The instructor provided the feedback below for my major strengths demonstrated in class:

> Keen desire to teach well + give the students the tools they need to apply the theory to real-world problems (i.e., their own research questions).

For the suggestion for improvement, she provided the following feedback:

> Keep at it. The care with the content + student learning is evident. Over time, will become more confident in which delivery method is best for the content.
>
> Have a couple of extra problems worked through so if there are questions there is a bank to poll from.

Second Observation: Two-way ANOVAs and Chi-squared Tests

For the second tutorial, the overall feedback was as following in term of content and style:

> Left with a clear expectation of how we would test on this material [with] good knowledge of the inner workings of 2 way ANOVA [and] χ^2-tests.

The feedback for the major strengths of my teaching is as following:

> - Good slides [with] pop-ups of formulas
>
> - Exercises/examples built in

For the improvement, she provided this feedback.

> Rather than finishing [with] a concrete example, intersperse it [with] the theory to help solidify the knowledge.

Third Observation: Criticism of Null-Hypothesis Significance Testing

For the third tutorial, the instructor did not fully complete the observation form. She provided the following statement on the form:

> Was too engaged in in learning about the topic to look at these things individually so just filled out the last page.

Even so, she still provided all three of the written feedbacks. For my presentation of my content and style, she provided the following:

> [The take away lesson is] that it is easy to do bad statistics. That they need to be critical when designing a study + reading about reach by others.

She provided the following feedback for my major strengths:

> This is a topic that Hubert is passionate about [and] it shows. None of the content existed in prior offerings of this course. Hubert pulled together a great set of content from history to current day with lots of examples [and] points of interest that students might follow up with.

For my improvement, she suggested:

> More pauses. More discussion. The video was great.