Nathalie Uwamahoro

TEACHING PHILOSOPHY

My years of immersion in electrical and computer engineering studies have given me valuable insights into effective learning and teaching. By combining my academic experience with strong interpersonal skills, I've developed a teaching philosophy focused on guiding students to think critically, pay attention to detail, and solve problems creatively both independently and collaboratively while fostering an inclusive environment that values diversity in personalities, cultures, and abilities.

In teaching **CIS 151** (**Principles and practice of programming)** and **CIS 351 (Data Structures)** for Computer and Electrical Engineering students or visiting teaching assistant for my PhD advisor courses such as **ELE- 614**, my philosophy emphasizes creating a dynamic, hands-on, and inclusive environment. The goal is not just to master technical concepts in Data Structures, Java, and Python but to foster problem-solving skills and a lasting passion for coding. My approach is grounded in the following key principles:

Enthusiasm: is a powerful motivator for active learning. Clearly defining course goals and real-world applications is crucial to sustaining student engagement and fostering success.

Example: In CIS 151, where students tackle coding challenges, we highlighted real-world applications, such as using Python to automate data analysis, which sparked students' interest in how programming can solve practical problems. Similarly, in CIS 351, a more advanced course, students are exposed to industry-used languages like Java, which fuels their excitement to develop useful software.

Differentiation and Diversity: recognizing the diverse academic backgrounds, cultures, knowledge levels, and learning styles of students is essential. I use a range of teaching methods, including demonstrations, interactive sessions, and project-based learning, to accommodate all students.

Example: During lab sessions, I adapt to students' varying skill levels by providing optional challenging problems for those with prior programming experience, which fosters engagement and peer support.

Effective Communication: open, clear communication is key to student success. I use both in-person and online tools to share important information and announcements.

Example: **If office hours change, I inform students during lab sessions, post updates on Blackboard Ultra, and send emails, ensuring everyone is aware.**

Flexible Teaching Management: teaching is about removing obstacles and empowering students to take charge of their learning. By offering general guidance and suggestions, I encourage independent problem-solving while holding students accountable.

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Example: **In CIS 151 and CIS 351 labs, I clarify tricky questions and provide examples, but I encourage students to think critically and develop solutions on their own while considering the provided examples.**

Continuous Feedback and Iterative Improvement: I provide continuous, constructive feedback, recognizing the unique starting points of each student. This approach supports individualized learning and motivates students to keep practicing and improving.

Example: **Through peer-to-peer interactions, students respond to my questions and pose their own, helping me assess their understanding and pinpoint areas for improvement.**

Assessment Based on Feedback: I find that seeking feedback from students enhances teaching quality far more than solely relying on lectures. My feedback-based assessment approach fosters an interactive learning environment.

Example: **I engage students in discussions about their work, asking them to explain their logic and identify challenges. This helps us resolve issues quickly and refine their understanding.**

More Hands-On Activities: practical application of theory is vital in a discipline like computer and electrical engineering. I aim to strike a balance between theoretical knowledge and hands-on practice to ensure comprehensive learning.

Example: **As a TA, I review labs ahead of time and offer additional resources, such as Python and Java documentation, to support students in their independent study.**

Discipline and Attention: maintaining discipline and attention in the classroom and lab is essential for creating a focused and productive learning environment. To encourage engagement, I moderately monitor students' progress by walking around the room, asking questions, and offering guidance when necessary, giving them space to focus on their work.

Example: In CIS 351, before starting the lab session, I ask students who have completed the lab to explain key concepts or discuss topics from the exercises. This not only reinforces important material but also helps students who are just beginning the lab to catch up. I then provide additional clarification on the lab's concepts, explaining the problem, the expected output of the code, and the documentation submission requirements. This approach helps students stay focused on their tasks while ensuring they remain attentive, thus maintaining discipline in the classroom.