

TENURE AND PROMOTION

TEACHING STATEMENT

Ananda Mohan Mondal, Ph.D.

1. Overview

Teaching is a learning process as well as a process of development for both the instructor and the students. The success of this process depends on the allocation of appropriate time by the instructor to prepare the class materials and by the students to study and understand the materials. As a faculty member, I am responsible for challenging and supporting my students in learning, understanding, and transferring knowledge of different concepts. As an instructor, my teaching objectives are to facilitate the construction of knowledge in and outside the classroom and to become an effective advisor and mentor to my students.

During my tenure of the last six years at Florida International University (FIU), I had the opportunity to teach nine courses with eight different preparations. These courses provided me with the opportunity to develop my knowledge base in different aspects of computer science spanning undergraduate and graduate levels, including Algorithms, Bioinformatics, Data Mining, Data Structures, Data Visualization, and Machine Learning. In this statement, I summarize my efforts and accomplishments in teaching and mentorship.

2. Teaching

2.1 Courses Taught

Table 1 provides the list of courses I taught in different semesters at the *undergraduate level*, including Data Structures (one semester), Algorithm Techniques (one semester), and Introduction to Machine Learning (two semesters) and at the *graduate level*, including Introduction to Algorithms (one semester), Bioinformatics (one semester), Machine Learning (three semesters), Data Visualization (one semester), Advanced topics in Machine Learning (three semesters), and Advanced Topics in Data Mining (two semesters).

Table 1. Courses Taught by Dr. Mondal

Code	Title	Level	Semester
COP 3530	Data Structures	Undergraduate	Fall 2020
COP 4534	Algorithm Techniques	Undergraduate	Spring 2020
CAP 4612	Introduction to Machine Learning	Undergraduate	Fall 2021, Fall 2022
COT 5407	Introduction to Algorithms	Graduate	Spring 2024
CAP 5510	Bioinformatics	Graduate	Spring 2023
CAP 5610	Machine Learning	Graduate	Fall 2021, Fall 2022, Fall 2023
CAP 5738	Data Visualization	Graduate	Spring 2019
CAP 6619	Advanced Topics in Machine Learning	Graduate	Spring 2021, Spring 2022, Spring 2023
CAP 6778	Advanced Topics in Data Mining	Graduate	Fall 2018, Fall 2019

2.2 Teaching Evaluation

Table 2 provides a summary of the teaching evaluation. Though I was assigned to teach *nine courses with eight different preparations*, I received my teaching evaluation scores between 3.23 and 4.25 (“Good” to “Very Good”) from the students, “Satisfactory” to “Good” from the department, and “Very Good” to “Outstanding” from the peer review.

Table 2. Teaching Evaluation

Year	Courses Taught	Evaluation (Scale of 5)		
		Students [#]	Department	Peer
2018-2019	CAP 6778, CAP 5738	3.49	Good	---
2019-2020	CAP 6778, *COP 4534	3.64	Good	*Outstanding
2020-2021	COP 3530, CAP 6619	3.23	Good	---
2021-2022	(CAP 4612, CAP 5610), CAP 6619	3.30	Satisfactory	---
2022-2023	(CAP 4612, CAP 5610), CAP 6619, CAP 5510	4.12	Good	---
2023-2024	*CAP 5610, COT 5407	4.25	---	*Very Good

Excellent = 5; Very Good = 4; Good = 3; Fair = 2; Poor = 1. #: Average of multiple scores

2.3 Notable Improvement

For the first offering of combined CAP 4612 (Introduction to Machine Learning) and CAP 5610 (Machine Learning) in Fall 2021, I did not receive good evaluation scores from the students (3.17 in CAP 4612 and 2.76 in CAP 5610) and the department (Satisfactory). To improve my teaching performance and provide a better learning experience to students, I put more time into taking weekly quizzes and returning the grade in the same week for the second offering of these two courses in Fall 2022. I believe adapting these two courses by giving weekly quizzes was innovative, which resulted in notable improvement in evaluation scores by both the students (increased from 3.17 to 4.35 in CAP 4612 and 2.76 to 4.29 in CAP 5610) and the department (increased from “Satisfactory” to “Good”). The improvement is also reflected in students’ comments: *“Interactive with students, and quiz in every weeks so we learn.”* *“The class has a quiz almost every week, which helps us to remember the weekly knowledge and accumulate it for the next lessons.”* *“This was a really hard material but the weekly quizzes were very helpful to really study and understand the material the homework where a little hard but fun doing.”* *“Weekly quizzes helped me lot to learn.”*

3. Supervision and Mentorship

As the lead of the Machine Learning and Data Analytics Group (MLDAG), I had the opportunity to train graduate, undergraduate, and K-12 students to become future independent scientists.

Ph.D. Students: I was the major advisor of 2 Ph.D. graduates – Dr. Abdullah Al Mamun, who graduated in spring 2022, and Dr. Raihanul Bari Tanvir, who graduated in summer 2023. Tanvir was co-advised by Dr. Giri Narasimhan, given his expertise in algorithms and bioinformatics. Mamun’s dissertation was to develop a machine learning framework for identifying molecular biomarkers from transcriptomic cancer data. He has published 2 journal articles and 6 conference papers and is currently employed at Meta (Facebook) as a Machine Learning Engineer. Tanvir has published 4 journal articles and 8 conference papers. He has joined Boehringer Ingelheim, a pharmaceutical company, as a postdoctoral associate working on AI-based drug discovery. Currently, I am advising 2 Ph.D. students. I also have served as a Ph.D. committee member for 17 dissertations (9 graduated and 8 current).

M.S. Students: I have had the honor of supervising 2 master’s students who have made significant contributions in their fields. Ms. Tasmia Aqila is now working at Amazon, and Ms. Mona Maharjan is a valued member of the information technology department at Syracuse University. I have also guided 10 students (5 graduated and 5 current) for their M.S. Capstone Projects, each of whom has demonstrated exceptional skills and dedication.

B.S. and K-12: I have had the pleasure of mentoring 3 undergraduate students at FIU: One was supported by the Academy for CS Education (PI: Giri Narasimhan), 2 by NSF REU (PIs: Niki Pissinou and Ram Iyengar). I also guided 61 undergraduate students at FIU for Senior Capstone Design Project to develop an App for analyzing biological networks under NSF CAREER RUI (PI: Ananda Mondal) through 10 semester offerings. This project could revolutionize how we understand and analyze biological systems. Additionally, I successfully mentored 8 K-12 students, providing them with valuable hands-on experience supported by my NSF CAREER.