

# STATEMENT of TEACHING PHILOSOPHY

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My first experience in teaching came in 2005, as soon as I finished my undergraduate education. I worked for one semester as a lecturer in the Incca University of Colombia teaching a class on Programming Languages. I wanted to innovate in the teaching of this class by creating several hands-on computer labs to expose students to different programming language paradigms. One of my early goals in teaching has been to help students become *self motivated, life long learners*. This is specially important in an always changing industry such as Computer Science: new programming languages are developed, new hardware platforms are released, and we should provide students the ability to acquire new skills and adapt to a dynamic field.

During my Master studies in Statistics between 2006-2007, I had the opportunity to teach Statistics I and II in the National University of Colombia to students in Economics, Business and Accounting. These classes involved a weekly lecture of over 120 students. This presented the challenge of making a mathematically oriented class accessible and engaging for students coming from different majors. I posed questions and tried to involve the audience to engage in discussions. I believe that one of the key issues in teaching is to make lectures *exciting* and *engaging*. I think that as educators, we are competing for student's attention and we should give them compelling reasons to attend our classes.

For the final assignment of the Statistics II class, I wanted my students to work on a project related to their major. I did a series of computer lab sessions where I taught them how to use the open source statistical package R. I made them form small groups, find a data-set from a real life problem, and apply the concepts learned in class, from descriptive statistics to hypothesis testing and finally create a final project report. Even though the grading of these final projects was time consuming, I did it because I think that it is really important for students to *work on group projects* and address *real life problems*.

I strongly believe that one of the main duties of professors is to prepare students for effectively answering the challenges of their professional careers: i) Students should be encouraged to work in groups, to enhance their communication skills and learn how to work in teams; ii) students should be exposed to problems closed to those they will encounter in real life; and iii) students should be able to write reports summarizing their work.

During the final stages of my Ph.D in 2013, I further developed my teaching experience by working as a Teaching Assistant at UIUC for CS 431: Embedded Systems under the supervision of professor Lui Sha. My responsibilities in this class were: supervising and guiding students during hands-on lab sessions, leading discussions, grading, mentoring extra credit projects for graduate students, and occasionally lecturing. In order to further develop my teaching skills, I attended seminars by the Center of Teaching Excellence at UIUC and I plan to continue doing it during this semester.

I began my teaching experience at FIU at 2013, I have taught several classes ranging from applied to the theoretical to both undergraduate and graduate students. This experience have transformed my pedagogical skills and made me realize that each class require a specific strategy. for instance, during my Programming III class I realized that students respond well to interactive coding sessions where I presented a piece of C code that was discussed to understand its main points and look for bugs. During Theory of Computation class, the students came from backgrounds other than CS (e.g other Engineering disciplines and Sciences). I had to design the course to make it self contained to make sure that even students with no formal background can build up their knowledge and take advantage of the class.

Another of my lessons learned during my teaching experiences is that the *big picture* must be given to the students and constantly revisited as the class progresses. This helps students understand how different class topics connect to each other and what are the most important concepts. I have applied this principle to my

recent Theory of Computation and Introduction to Mobile Robotics class.

One fundamental idea that I am applying in my current classes is highlighting the *relevance* of the class in the context of applications and industry. I believe that students need to see the connection between the topics being taught and their future careers and how this can be used in applied context. For example, during my Theory of Computation class I tried to highlight the importance of the theoretical results in CS and how they are related with concrete problems as well as motivate the use of different models of computation in applied areas in CS.

In the course of my career as a young faculty, I have had the opportunity to be a research mentor several students at the undergraduate and graduate level. This has been an extremely enriching experience for me and has given me personal satisfaction to see that students I have mentored have found great jobs and are moving to the next stage of their careers, some of them as industry researchers and faculty themselves. I believe that one of the key issues for effective mentoring and teaching is to transmit the *passion* that I have for the subject area to the students. I believe that once students are *motivated*, they will find the time, energy, and persistence to pursue their goals and to do their very best work. One of my main duties as a mentor is to ignite that initial spark and to keep presenting adequate challenges that allow them to grow.

Another fundamental thing that I have noticed while supervising undergraduate and graduate students and by teaching is that *no two students are equal*. Some are methodical and like planning, others prefer a more hands-on approach and learning by doing. Some other students like constant feedback and discussion, while others prefer little supervision. This help me realized that students learn in different ways and have different strengths. As educators, we should be aware that no two students are equal, and they bring a diverse array of backgrounds, strengths, and learning styles. It is my job as an educator to be sensitive to these differences in the classrooms and to adapt my teaching methodology to better suit them.

I also believe that educators have a strong social responsibility. I have been involved in programs to encourage traditionally under-represented groups to study Computer Science and in my experience robotics and sensing is a great vehicle to get K-12 students engaged and motivated. I plan to continue doing service and outreach activities because I believe that they will further enrich my teaching experience.