TEACHING STATEMENT

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I have always looked up to the profession of teaching as highly selfless and noble. Several of the people whom I greatly admired through my school and university years have been my teachers who have dedicated themselves to their profession and to their students. Therefore, it seems most natural that I follow in their steps.

Experience. I have already about four years of teaching experience in the capacity of Lecturer (2015-2019) in the Dept. of Mechanical Power Eng., Tanta University, and two years earlier as a Teaching Assistant (2008-2010) within the same department.

As a Teaching Assistant, I was involved in the assist of teaching both the basic and specialized undergraduate-level courses in Mechanical Power Eng. That's the Fluid Mechanics, Power Stations, Turbomachines, Hydraulic Power Systems, Automatic Control of Mechanical Systems, Mechanical Vibrations and Measurements Laboratory Courses. I helped conduct exercise and Lab sessions in addition to graded homework assignments and exams for my classes.

After completing my postgraduate studies at Egypt-Japan University of Science and Technology (EJUST) in Mechatronics and Robotics Eng., I've joined again the Dept. of Mechanical Power Eng., Tanta University as an Assistant Professor. Because of my specialty, I've taken charge of teaching mechatronics and robotics relevant courses such as Automatic Control of Mechanical Systems and Robotics. Besides, I've been teaching some of the department specialty courses like Hydraulic/Pneumatic Systems Design and Advanced Fluid Mechanics in addition to Fluid Power Control for the graduate-level. Throughout my lectures, I've set my goal to emphasize the strong relation between various applications of mechanical power engineering and automatic control, even in teaching the robotics course as it could be considered one of these applications tolerated in a different manner. I've concentrated on the field of fluid power applications as they are strongly demanded. Moreover, I've supervised many graduation projects implementing the control of fluid power systems over various applications and co-supervised different ones related to the power generation from agricultural wastes. Meanwhile, I've the opportunity to establish a Hydraulic/Pneumatic Systems Lab for the undergraduate level as a first step towards the implementation of the automatic control principles on various power source components.

During my work in Tanta University, I've mainly assisted in establishing the Mechatronics Program for the undergraduate level. I have had an effort in setting the origination and organization of the program bylaws, referring rules, courses syllabus and laboratory requirements. Unfortunately, I haven't the chance to teach the program students because of my leave to Japan as a postdoctoral fellow and they are still in the early preparatory years.

Teaching Philosophy. These experiences have helped shape my teaching philosophy and style for three distinct areas: undergraduate teaching, graduate teaching and supervision duties.

Undergraduate Teaching. First, I strive to make my teaching relevant to my students' experiences and interests. I always seek to communicate why the material I teach is relevant and how it will be useful.

Second, in my lectures, using presentation tools is preferable as much as it is suitable. Once it is hard for the students to follow, I change to the traditional method as they feel more comfortably. In addition, using available software and experimental systems relevant to the course is essential once they could be provided. In my lecture notes, I prefer the dependency on a variety of reference texts in the preparation and providing them for the students. I do believe that study from reference texts in the early stage helps the students clearly clarifying the basic principles for a particular topic.

Third, I attempt to involve students directly in learning. I engage students interactively in the discussion of examples from their experience and adapt my teaching to emphasize material they respond to more positively. In assignments, I challenge students to integrate course concepts with their experience and interests. And for some courses, self-study parts are left for the students to encourage appealing their abilities for learning.

Fourth, and most importantly, I structure my teaching around explicit mutual respect. I realize that in every class meeting, the students give me hours of their attention. I strive never to waste it. I continually seek feedback from the students so that my teaching is more relevant, useful and important to them.

Graduate Teaching. I believe that graduate students should already be motivated enough to take a particular course. Therefore, it is important to deal with this enthusiasm by giving them their time's worth in understanding a subject fully and deeply. Fresh and enjoyable teaching methods are suggested. Such methods include the citation of historical facts about the development of the subject and pointing out open problems and emerging areas.

Supervision Role. This is the most important part for the preparation of the students for graduation with qualified skills. Stressing on the adaption of the students' skills is the intended goal, not only relevant to knowledge but to communication and lifestyle as well. Through the work over the graduation project, the students are learning how to originate an engineering problem and using their theoretical bases they gained over the past years to find out unique solutions. In addition, they increase their capabilities of self-learning, criticism, collaboration and presentation skills.

Teaching Courses.

Undergraduate level

1. **Automatic Control of Mechanical Systems:** An introductory to control systems. Topics include system modeling of different systems, transient and steady-state responses, closed-loop control systems, stability of dynamic systems, control systems design in the s-plan. Case study examples applying MATLAB.

2. **Robotics:** An introductory to robotics. Topics include homogenous transformations, forward and inverse kinematics, velocity kinematics and Jacobian, static forces and robots' dynamics. Case study examples applying MATLAB.

3. **Hydraulic/Pneumatic Systems Design:** An introductory to fluid power systems. Topics include fundamental principles, hydraulic elements, hydraulic circuits design and analysis. Experimental implementation of specified hydraulic circuits and case studies applying Automation Studio Software.

4. **Advanced Fluid Mechanics:** Topics include fluid kinematics, differential analysis of fluid flow, solutions for viscous incompressible fluids, fluid film characteristics in bearings and turbulent flow.

Graduate level

1. **Fluid Power Control:** Topics include pneumatic systems: components and circuits, electro-hydraulic and pneumatic systems, electro-hydraulic servo systems and Closed loop response of electro-hydraulic servo systems. Case studies examples applying MATLAB.

For the future, I look forward to teaching a variety of courses more related to mechatronics and robotics specialty at the beginning and upper undergraduate and graduate levels.