

# Teaching Profile

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### 1. Introduction

I started my teaching career at Bahuddin Zakariya University [BZU], Pakistani in December 1975 after my MS in Mathematics. In 1979, I went to Canada for my higher studies. I was “Teaching Assistant” during the period of my studies at the University of Western Ontario [UWO] and University of Alberta [U of A]. After completion of my PhD in 1985, I went back to Pakistan and resumed my job at BZU. I moved to King Fahd University of Petroleum & Minerals [KFUPM], Saudi Arabia in 1988. In 1997, I was on a 1-year academic assignment at the National University of Sciences & Technology [NUST], Pakistan. Since 1998 to date, I have been teaching at *KFUPM*.

### 2. Nature & Level of Courses Taught

I have taught several courses at different institutions which range from Pre-calculus to Graduate level. These include

#### [Undergrad Level]

- Pre-calculus
- Calculus Sequence
- Advanced Calculus Sequence
- Differential Equations & Linear Algebra
- Topology
- Abstract Algebra (Only at BZU)
- Complex Variables
- Engineering Mathematics
- Numerical Analysis
- Linear & Non-linear Programming

#### [Graduate Level]

- Real Analysis
- Functional Analysis
- Linear Algebra
- Numerical Analysis (Only at NUST)
- Optimization Techniques
- Approximation Theory.

### 3. Teaching Philosophy and Goals

“The only way to learn mathematics is to *do* mathematics” is the basis of my teaching philosophy which I remind to my students at the start of each course. I prefer to involve the students during my lecture. I view my role as a facilitator in the teaching process. I try at my level best to design the framework in which learning can take place, and then stimulate and nurture the students' development, giving help in terms of knowledge, techniques, and encouragement.

My goals in teaching are not just to promote learning of the subject matter. I also try to help the students learn to think logically, learn

problem-solving methods and techniques, and improve writing skills. In addition, I try to help students understand how the lecture material links to various concepts they took in their earlier courses.

#### **4. Teaching Methods**

I usually begin each class with a brief summary of the previous class session, and a reminder of where we left the topic we are currently working on. After this, I briefly outline the new material and list its objectives. My teaching style varies according to the nature of the course.

In the lower level courses, I always subdivide my lecture into various concepts related to the topic and append a number to each one for quick reference. After explaining the concept, I demonstrate its application to an appropriate exercise of the text. I usually break the solution of an exercise into various steps and seek the input of the students while moving from one step to another. I encourage questions and pause in the lecture to answer them. Depending on the time and topic, I may then have an in-class exercise, usually involving cooperative learning with a follow-up discussion to end the class. I always assign practice problems and reading at the end of each lecture.

As much as possible, I try to present course material in analytical, numerical, and graphical contexts. This approach of course depends on the particular topic, but it is particularly valuable in calculus, differential equations, and numerical analysis courses. I am especially conscious of using geometrical figures and graphs to illustrate different concepts. This helps most of the students develop intuitive understanding of the concepts in the class.

In the Pre-calculus and Calculus courses, I incorporate cooperative learning techniques into the class sessions, particularly during the recitation hours. I involve the students to work in pairs or groups of four on a short problem, with specific instructions on how to share ideas and come up with a common solution. While the students are working, I move around the classroom to help various groups.

My strategy in the senior and graduate courses is a bit different. Here, I try to motivate the students towards self-learning. The class size at this level is usually small. Therefore, I invite the students to initiate proof/solution of the result/problem under discussion on the blackboard. Towards the end of the course, I also direct them to research material that is closely related to their course contents. However, this exercise is only up to getting exposure of some research articles.

## 5. Use of Technology

I prefer to use computer for demonstration purposes in many courses. The courses like “Numerical Analysis, Linear Algebra and Differential Equations”, are significantly based on numerical software like MATLAB in my classes. In calculus courses, I advise the students to use a graphing calculator for in-class exercises and homework.

I keep all the information related to my courses on the WebCT and continue on updating it with relevant activities which include solution of quizzes/exams, selective handouts and important announcements concerning the dates of exams/quizzes, submission of homework and/or any temporary change in office hours

- Depending on the nature of a course I explain a specific part of the material by transparencies or multimedia. This approach provides my students a comprehensive exposure of the topics where students usually get lost in the lengthy calculation or unable to visualize the geometrical concepts.

## 6. Interaction with Students

I encourage my students to discuss their academic problems during my office hours, which I designate four to six times a week. I make myself available at other hours as well. I have tried to increase communication with the students as well as get their feedback. I usually invite the poor performers after the major exams, discuss their hardships or study habits related to the course and provide them advice accordingly

In graduate and senior level courses I have a small discussion with each student, usually midway through the semester. I tell them my view on their work and try to give them suggestions for the material in which they need improvement.

## 7. Student Evaluation

I believe in student evaluation to the extent where I can improve my teaching abilities. I use this evaluation to modify my teaching in the benefit of students. However, I do not compromise on the class discipline and course standards to please the students and as a result expect higher evaluation from them.

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