Sami El Ferik

Statements of Teaching and Service

Teaching Statement

My teaching contribution covers many areas, namely numerical solutions, modeling and simulation, control design, Performance monitoring, and condition-based maintenance. I was awarded the best teaching award at the college level during the last academic year.

Based on my records, I have been selected by King Abdullah University of Science and Technology (KAUST) to support the department of Mechanical Engineering, Physical Sciences and Engineering Division. I have taught ME 210 Control Practice to a class of 30 graduate students. During this course, we aimed at developing the following student skills

- Ability to develop new theoretical results. (Open Problems/Proofs)
- Ability to adapt and learn new control applications. (7 projects in different fields emphasizing the multidisciplinary nature of control applications)
- Ability to conduct research and work as a member of a coherent team.

The course activities included many projects in different fields of sciences highlighting the multidisciplinary nature of control. I also was the main driver behind finalizing the control lab, organizing the first industrial visit, and receiving speakers from the industry. During the next spring semester, I am expected to teach System Modeling and Identification. KAUST also has initiated the Winter Enrichment Program (WEP). During this period many reputed scholars are invited to give lectures in different subjects. I will participate in this program by giving a course on Networked Control Systems as well as a seminar on research avenues and challenges in control theory ad applications.

At King Fahd University of Petroleum and Minerals, I have taught ten different undergraduate courses and five different graduate courses with an average student evaluation of 8.99/10 for undergraduate courses and 9.2/10 for the graduate courses, while the averages for these courses in the SE department are 8.19 and 9.06, respectively. Among the ten undergraduate courses, nine are regular courses and one is a course that I have fully developed.

Student learning is the priority when designing and planning my courses. I have succeeded in creating an excellent environment that is conducive for learning, and have increased students' self-esteem and preparation to the job market. Students have recognized such effort by awarding me the Students' Recognition Award, Systems Engineering Department, KFUPM, 2006-2007.

I have contributed to student understanding, by adapting my course materials according to students' needs. I constantly strive to provide an environment that motivates learners and enhances their expectations. My interest in student learning was the main drive behind initiating two projects with the Deanship of Academic Development (DAD), at KFUPM. The first project aims at developing a full online Numerical Method Course with illustrative examples of the

course content. The course can be given as a standalone online course or could be blended with a regular face-to-face one. The second project aims at assessing student learning preferences and skills and prospecting the compatibility of such skills with technology use. The development of technology features used in teaching and the comparison of learning-style assessment tools are among the expected outcomes.

During the new undergraduate course SE439 (CISE 433) "Condition-based maintenance and control loop performance monitoring," five invited professional engineers from five different industrial companies presented lectures on the latest industrial practices and technologies related to the course's topics. The involvement of industrial practitioners and technology experts considerably enhanced understanding of the course material, raised student self-esteem, gave learners useful insights on the industrial job market needs, and provided them with preparation hints for such market.

Among the five graduate courses I have taught, three are core courses for which I have developed course materials, simulation packages, and project materials. In particular, SE505-Real Time Systems- is a graduate course that has not been taught for more than eight years; and, consequently, no syllabus or course files were available. Nonetheless, I have succeeded to develop full electronic SE505 course material. The electronic lectures as well as an important database of papers and references were made available through the web to the entire graduate students and colleagues who, later on, have taught the course. The assigned student projects in this course covered not only theoretical aspects but also practical ones. Students were encouraged to work within learning teams to implement their designs using new experimental equipments acquired by the department. For the new graduate course SE590-Advanced Condition Based Maintenance- I also have developed the course material, simulation package, and project materials. The teaching material that I have prepared has helped in initiating two capstone senior projects that have been recommended for ISA competition during the 4th Workshop on Industrials Systems and Control. One of these projects won the First place and the Best Applied Project Awards. The Judging committee consisted of five independent judges from ISA professional engineer members representing local industries such as Saudi ARAMCO, SABIC, EMERSON, and IPS.

In addition, with the active support of the Department administration, I have initiated the development of two new laboratories. Experiments and lab manuals for Computer Aided MFG and Robotics as well as for Condition-Based Maintenance have been prepared as part of the outcomes of such effort and are currently used in two undergraduate courses and one graduate course, as mentioned above.

I have supervised many senior projects and coop students. A brief description of some of these projects has been listed in the teaching section. I have been involved in teaching and coordinating various short courses at KFUPM. I have coordinated two short courses among the five in which I have been involved.

University and Department Service Statement

Since I have joined KFUPM, I have been actively contributing to its community. Indeed, I have been involved in many committees within the department and college as well as at the university level. I was the recipient of the Best Service Award from the College of Computer Science Engineering, KFUPM, 2006-2007. I also was awarded the Award of Merit In Recognition of Inter-Departmental Collaboration, College of Computer Science Engineering, KFUPM, 2003-2004. The list of committees in which I constantly have played a major role is provided in my resume. I have been involved in more than 34 different committees among which 16 are standing ones.

I have been the organizer of two Workshops on Industrial Systems and Control-WISC 07 and WISC 08. The quality of the organization of these workshops has been praised by all attendees of the events. Both workshops have attracted more than 570 participants and many more are expected in the coming years. Due to this success, the workshop has been promoted to Symposium. I am chairing the organizing committee for the 6th Symposium on Industrial Systems and Control (SISC2010) scheduled for May 11-12, 2010. The major benefit for such events is the recognition of the field of control and instrumentation, and the development of increasing awareness of its major applications. Due to such efforts and many initiatives championed by the department's leadership, the number of enrollment in such specialty has increased. I also am proud of being selected as the representative of Systems Engineering Department Control and Instrumentation in a KFUPM-Yokogawa collaboration in research and development discussions held in Japan, Yokogawa headquarter, in August 10-18, 2008.

At the university level, I have played a major role in many standing committees such as Library Committee, Community Affairs Committee, and Faculty Affairs Committee. The quality of my contribution to such endeavors and the satisfaction of the committee members have been the main drives behind appointing me by HE the Rector as a member in these committees.

In the Community Affairs Committee, I have contributed by developing a database where all the committee's recommendations for the years 2004-2005-2006 have been entered. We designed the different attributes and fields that should be used for query. By doing so, the committee members can track recommendations that are still pending, approved, and implemented or rejected.

The Library Affairs Committee no longer exists. However, for years, the committee has been looking to all matters related to the library operation including use, subscription to periodicals, journals, and magazines, space, safety, and communication with the user (student), among other aspects. I have acted in this committee for three years and have been appointed by HE the Rector during the fourth one. As the chairperson of the Environment, Safety and Space Subcommittee, I worked with the committee members, and we have helped the administration tackle some of the

weaknesses. Many of the recommendations we made have been implemented following the nomination of the new dean for the library after he served as a chairman of the library affairs committee. I also supervised a senior project where a team of two students benchmarked the space and the number of students using the library with many others from reputed universities. The team also studied the layout of the library, the operation process, and the location of the different library departments. The report has been presented to and well received by the Dean of the library and the library staff.

Faculty Affairs Committee has mainly the role of ensuring a fair performance evaluation of KFUPM faculty members. The committee possesses two subcommittees, one of which deals with performance evaluation and the other one addresses appeal cases. The faculty affairs committee can be considered as the most demanding committee in terms of effort and rigor to ensure a fair evaluation system. I contributed to all the Performance Evaluation committee activities. I also chaired the Performance Evaluation Subcommittee when the chairperson was absent. I constructively contributed to the committee's efforts by clearly expressing my opinion regarding all the issues related to faculty evaluation, the new form B, and the various regulations. The appreciation of my work was behind my nomination as part of the committee for the academic year 2008-2009. In the first meeting of the committee, I have been nominated as the chairperson of the subcommittee for performance evaluation.