

Engineering Education in the United Arab Emirates

Kamal S. Ali¹

Abstract

This paper gives a brief description of the engineering education in the United Arab Emirates using the Electrical Engineering Department of the United Arab Emirates University (UAEU) as an example. UAEU has an accredited Electrical Engineering Department that produces quality electrical engineers for the country. In spite of the many cultural hurdles faced by the UAEU, the University has managed to maintain quality engineering education, both for males and females in the UAE. This paper sheds light on some of these hurdles, and how the university has tackled them.

Introduction

The United Arab Emirates University (UAEU) was established in 1976. In 1977/1978 the university began with four Faculties (Colleges). These were the Faculty of Humanities and Social Sciences, now known as the Faculty of Arts, the Faculty of Education and the college of Business and Economics now known as the Faculty of Administrative and Political Science. In 1978 the Faculty of Shari'a and Law was established and in 1980 the College of Engineering was established.

Today the college of Engineering houses five departments. These are the Electrical, Mechanical, Architectural, Chemical and Civil Engineering Departments. All these departments follow a semester system that closely resembles the US education system. Although very similar to US educational institutions, the UAEU differs in many aspects from its US counterparts. Most of these differences are dictated by the cultural setting of the nation. In this paper we will examine the differences and similarities between the UAEU and the US educational institutions. We will also look at the way UAEU has overcome the many hurdles to become the institution it is today.

Cultural Background

The United Arab Emirates (UAE) is an oil-rich nation located at the southwestern tip of the Arabian Peninsula. The population of UAE is about two million, well over half of which are expatriates. The UAE is a predominantly Muslim country with deep religious convictions. Although well tolerated, other religions form a rather small minority in the UAE.

One of the main hurdles that faced the UAEU was the gender problem, as the local culture frowns upon mixing of genders. To ensure that females would seek higher education, the UAEU had to segregate the student body based on gender. Today, the UAEU, for all practical purposes, is two separate universities, with a separate campus for each gender.

Within the University campuses and in adherence to the local cultural norms, strict rules are enforced to maintain separation between the male and female students. This causes duplication in the cost of all activities. Although this adds a major financial burden on the University, it is a small price to pay to ensure

¹ Professor of Computer Engineering Technology, University of Southern Mississippi, Box 5137, Hattiesburg, MS 39406-5137

that both genders are educated. Upon graduation, however, both males and females work shoulder to shoulder with no visible problems.

Adherence to the strictly segregated university regulations is probably used to ensure that the females of the UAE get their opportunity of higher education. If education in the UAE was mixed at the university level, it is quite likely that many of the parents would prefer to keep their daughters at home. This, segregated campuses method is clearly a success, with the female student population far exceeding that of the males.

Academic Standards

The academic standards followed by the UAEU, especially by the college of Engineering, are almost identical to those followed by most major US institutions. In 1998, the Accreditation Board Engineering and Technology (ABET) United States evaluated the College of Engineering of the UAEU. All programs were awarded the substantial equivalency for 6 years, which is the maximum accreditation level possible. This is a clear indication of the quality of education in the College of Engineering.

Internships:

Graduates of the engineering programs of this university, complete 168 semester credits before they are awarded their BS degree. One reason for the inflated number of hours is that the student has to complete a full semester of industrial internship. These internships are completed both nationally and internationally. The UAEU has a separate unit charged solely with managing the Engineering students' internship activities. Although students are allowed some latitude in selecting the organization they are to complete their internship with, the final decision rests with the UAEU training unit. The internship is generally completed when the student has a minimum of 112 credits. While in training, the student has to submit a weekly report of his/her activities. This report is reviewed and graded by the student's advisor. Upon completion of training, the student gives a presentation that is attended by professors, as well as, representatives from industry. All internships come at no cost to the student. In most cases, the training company pays these expenses.

The training/internship program at UAEU is truly a unique program that produces good results at little to no cost to the University. Not only does this program give the students industrial experience, in many cases it allows the students exposure to foreign cultures. This has invariably proven to be most beneficial to the student and the country.

Instruction Language:

Instruction in all engineering disciplines is conducted in English. As education in K to 12 is in Arabic, using English as an instructional medium has proven to be another hurdle. During the first year, students are subjected to extensive language training. Although somewhat helpful, the abrupt transition from Arabic to English is still a problem. The University is working hard to remedy this problem; a true solution will have to be implemented at the pre-university level. Nevertheless, throughout their university education, students are allowed the use of a language help center. This help center is populated with native English speaking instructors, with the main purpose of providing language support to the students. All these factors help somewhat alleviating this problem.

Future Standards:

Since the ABET visit in 1998, the University has embarked upon the implementation of outcome assessments. Using this system, it is anticipated that academic standards will be pushed even higher. Given the resources allocated for the betterment of the institution, using the outcome assessment system will ensure the efficient utilization of such resources.

To ensure a high level of academic standards, the University has adopted a stringent promotion mechanism. It is a requirement that all faculty go through promotion before completing a maximum of five years in rank. This is true even in the case of Associate Professors. Although in many US institutions an associate professor can remain at that rank indefinitely, this is not the case at UAEU. A five years term is the limit at the rank of Associate Professor.

Faculty Stability

The UAEU does not have a tenure system for its faculty. Normally, faculty is contracted to work for the University for a period of four years. This term is renewed upon its expiration on the fourth contractual year. The University, however, does have other contracts that are longer than four years. These long-term contracts can last for as long as eight years. These long-term contracts are the exception rather than the rule. This leaves the majority of UAEU faculty with a degree of uncertainty. Although this can ensure that faculty work hard for the renewal of their contract, the negatives of insecurity far outweigh the positives of a short-term contract. Consequently a good many of the UAE faculty would continually seek employment elsewhere, causing a fairly high faculty turnover. This contract problem does not apply to the local citizens of UAE. Local citizens are given a semi-automatic tenure. The faculty instability problem will hence alleviate itself as more and more citizens take up faculty positions.

Currently the level of instability is very much detrimental to the University. A possible solution for this problem is the Rolling Contract system. Other institutions in the UAE but not the UAEU adopt this system. Here a faculty member is given a two or three-year contract that is renewed yearly. In other words a faculty member is ensured of two or three years of employment each year. Or, should a faculty member's contract be terminated, he or she will have two or three years in which to seek employment elsewhere. This would probably be the closest to the tenure system used in the US.

Research

The UAEU encourages faculty research. Most of the faculty research projects were supported by funding from the University. Recently, the University has established an office for the purpose of encouraging externally funded research. The effects of this office are already visible with two industrially sponsored laboratories in the College of Engineering. The University is also in the process of formalizing laws to govern faculty's off campus consultancies and research. However, a hurdle facing the research efforts of faculty at UAEU is the heavy teaching load. The University expects a minimum of 12 credit hours of teaching per faculty member. In some cases faculty members carry loads over 12 hours. This invariably slows down the research activities at the University. This issue is currently being addressed by trying to increase the number of faculty to reduce the teaching loads.

The Campuses

The university campuses are located in the City of Al Ain, the second largest city in the Emirate of Abu Dhabi. Al Ain is a modern city with all the amenities of the western world, yet with a very high level of personal security. Al Ain is virtually a crime free city; nevertheless, citizens of Al Ain and the United Arab Emirates do enjoy a high level of personal freedoms.

Conclusions

The United Arab Emirates University is a world-class university that provides a high quality education, especially in the field of Engineering. Although UAEU is a relatively young University, it is quickly emerging as an educational center in the Middle East. The progress of this University can be attributed to the very strong commitment of the United Arab Emirates to education.

References

1. The UAEU Web site, www.uaeu.ac.ae

Kamal S. Ali

Dr. Kamal S. Ali received his doctorate in Solid State Physics from Reading University, UK in 1981. He then proceeded to get his Masters in Electrical Engineering from West Virginia University in 1985. He currently holds the position of Professor of Computer Engineering Technology at the University of Southern Mississippi. While on leave of absence from USM, Dr. Ali worked for the United Arab Emirates University as a Professor of Electrical Engineering (August 1998 to June of 2000)