

Report on a Statistics Course at RUPP

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I have taught an introductory statistics course at the level of Hoag and Craig (an upper division undergraduate course). The covered topics included the following:

Brief overview of probability, including families of distributions, basic notions of convergence in distribution and probability, central limit theorem and weak law of large numbers. Basic theory of point estimation including mean square error, unbiasedness, consistency and sufficiency. Basic notions of interval estimations and hypothesis testing. Basic notions of Bayesian inference. Some basic applied procedures such as two sample t-test and linear regression.

It was my intent to supplement the course with computer lab sessions teaching the basics of the statistical package R. However, this failed due to the frequent power outages. In particular out of the planned four computer lessons I was able to complete only one. All others were cancelled because there was no power to run the computers in the lab.

Additionally, I met with several local faculty members and discussed their understanding of the role of the program as well as the living conditions of the students and faculty in Cambodia. I will discuss some of my impressions about the situation in Cambodia below:

It is immediately apparent that Cambodia is still suffering the effects of Khmer Rouge massacres that happened 30 years ago and resulted in extermination of virtually all educated Cambodians. This is definitely apparent in the area of statistics. There is currently a big need for educated statisticians in many of the sectors of Cambodian economy. However, there are no qualified statistics teachers. Several of the students have expressed a great desire to learn statistics at a higher level than one three-week course can offer. If funding would permit I would recommend expanding the statistics course offerings in the MS program in Mathematics. I would also suggest exploring a possibility of an MS program in Statistics at RUPP or another Cambodian university. I would definitely be willing to help with it.

Some of the students and faculty also expressed interest in taking MS distance courses in Statistics. There is a very good program at Colorado State University that would suit the needs of some of the Cambodians. However, the price is prohibitive for people living in a third world country. It could be of interest to explore a possibility of pooling some sources of funding to allow one exceptional

Cambodian student to enroll in the distance program. This would have a great impact, as it would allow the student to get a US quality of education without having to leave Cambodia. The student would also be able to immediately apply the knowledge acquired for the good of Cambodia.

Let me now comment on my course. There were about 25 students in it. They were a mixed bag. Some of them spoke and understood English well. Some did not. The exams revealed that some had an understanding of how to reason rigorously while others would copy sentences from the lecture without any apparent understanding of their meaning. It was my feeling that about 5-10 of the students should not have been admitted to the program as they showed profound lack of understanding of basic notions such as calculus. Having a smaller class would also make it easier to overcome the language barrier and to interact with the students during class.

The format of the course was grueling. It was taught 3.5 hours a day (with a break), 5 days a week. Additionally most if not all of the students were working many hours to cover their living expenses. This did not allow for sufficient time for the students to review the material at home. While the intensive format is probably a necessity, there are a few things that can be done to make it easier for the students. First, inserting weeklong breaks between individual courses in the MS program would allow students to catch up with their lives outside of class. Several of the students have complained that they have courses back to back to back. Additionally it would be extremely useful to pay a stipend to a few of the best students in the class. I believe that \$100 - \$200 a month would allow a student to devote all his/her energy to studying.

In conclusion I want to say that I found the experience in Cambodia rewarding. The students were eager to learn and showed great thankfulness for the opportunity to learn. I believe that the program is an important tool in improving Cambodian education. It has a great impact in influencing the overall atmosphere, expectations and understanding of mathematics. I believe that the fruit of this collective work will be apparent soon. I hope that the program can be continued in the future. I am definitely willing to go and teach at RUPP again next year.