A Course on Research Methodology: Context

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"If to do were as easy as to know what were good to do, chapels had been churches, and poor men's cottages princes palaces. It is a good divine that follows his own instructions: I can easier teach twenty what were good to be done, than be one of the twenty to follow mine own teaching."

William Shakespeare

"He who can, does. He who cannot, teaches."

George Bernard Shaw

1 Introduction

The genesis for this course comes from a UGC notification that there should be a compulsory course on "Research Methodology" (RM) as part of the course work for any candidate pursuing a PhD programme under an UGC-affiliated university. Further, the successful completion of such a course would be a mandatory criterion for obtaining a teaching position at any UGC-affiliated university.

This does not apply to the Indian Statistical Institute (IS), at least not directly. Though, of course, a university could insist on successful completion of the above mentioned course on RM as a condition for offering a teaching position to a PhD-degree holder from ISI. Whatsoever, this notification made me think about the possibility of offering such a course. After consultation with Professor Subhamoy Maitra, the current Professor-in-Charge of the Applied Statistics Division (ASD), I decided to offer this course to the research fellows of ASD. Professor Maitra circulated the proposal to the faculty members of ASD. Some positive responses and no adverse responses were obtained.

In my perception, properly conducting the course would require a substantial amount of interactive participation from the students. In view of this I decided that the number of participants should not be more than twenty-five. The course was first opened up to the research fellows of ASD and later to some of the other divisions. It was made clear that the course is not compulsory, though a certificate would be given by the ASD on completion of the course.

Coming back to the UGC rule, The Gazette of India, July 11, 2009 includes a UGC notification dated 1st June, 2009. On Page 4054 of the above mentioned Gazette, Item 13 mentions the following regarding RM.

> *" ... must include a course on research methodology which may include quantitative methods and Computer Applications. It may also involve reviewing of published research in the relevant field."*

The above provides a somewhat minimalist guideline regarding UGC's perception of a course on RM. A research fellow at any proper research institute would typically have completed this minimum aspect of research. The question, therefore, is whether it is possible to do something more? On searching the Internet, I found several course outlines and also books on RM. After going through some of these material I decided on the following outline for the course.

The purpose of the course will be the following.

1. To familiarise students with the different aspects of research.
2. To provide an idea of good scientific writing and proper presentation skills.
3. To provide an understanding of philosophical questions behind scientific research.
4. To provide a brief background on the historical legacy of science.

Focus of the course will be on research in mathematical and engineering sciences, in a broad sense of these terms. Some portions of the course, though, may be relevant to other subjects. Pointers to reading material will be provided during the course.

The course will consist of lectures by the instructor and lectures by other guest lecturers, presentations by the students and panel discussions among the students on different topics. Assessment will be based on written assignments and on the participation in the discussions and lectures.

The course will consist of about 30 sessions (lectures, discussions, student presentations) each of 1.5 hours duration. Sessions will be conducted twice weekly. Final evaluation will be given as a grade and successful/unsuccessful completion of the course will be indicated.

Based on the above objectives, the course naturally divides into two parts – advice on different aspects of research and history and philosophy of science. I decided to split the course vertically into two parts, with one lecture per week on each of the above two parts. The rationale for doing this is two-fold. First, in my opinion, the history/philosophy part complements the other part and second, doing this would give me some idea of the progress of the course.

The pdf files for the talks provide the main points that were discussed in class. Properly writing out the course notes would require transcripting the discussions. This may possibly be done in the future. In their present form, the presentation files for the talks only indicate some issues which have been considered important by the instructor.