# THEME-BASED COURSES FOR TERTIARY EDUCATION

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Standard text books starts with descriptive statistics, basic probability theory, probability distributions, sampling theory, estimation and hypotheses testing. Some may go on to introduce regression, analysis of variance and time series. University teachers all understand that the majority of the students will major in disciplines other than statistics and they will need the statistical knowledge to help them to go along in whatever field of study. The most conscientious teachers, therefore, aim at covering as much content as they can. From the student's point of view, however, the purpose is not that clear. They have been advised by teachers or friends to take at least one statistics course because it is "important" and "useful". In doing the course they find that they have to pick up new concepts, new terminology, new theories and carry out calculations as well. Given that so many things have to be covered in a course, it will be very difficult for the instructor to give a large number of examples, especially real life examples simply because when statistics is apply to real life problems, there will be other disciplines involved and to present the problem itself is already a very time consuming task. After completing the course, the usual feedback is, it seems to be a useful course but I am not sure because I do not know when and how to apply the things that I have learned. This is perhaps an indicator warning the failure of fulfilling the purpose of enhancing statistical thinking and problem solving. To overcome this drawback, thematic course is proposed which is inter-disciplinary in nature where expertise in different areas are pooled together to introduce different approaches to investigate a problem and demonstrate how investigators with different expertise will work together to identify problems and join hands to solve them. In an environmental study, for example, the ozone layer can be the theme of study. Ozone relates closely to global warming due to man made causes and ultraviolet radiation from the sun. Experts in different natural science disciplines and medical people can be involved and ultimately, data analysis plays also an important role. Statisticians, therefore, can present how statistical problems can be formulated and tackled, how to explore data and how to interpret statistical data analysis results, as well as the strengths and weaknesses of statistics analysis. Such courses are non-technical but intellectually challenging. They can be provided to students of all as part of the general education for

university students. For statistical education, these courses also serve as stimulator which can broaden students' thinking and motivate the students to learn statistics. Together with some project-based learning where students will have hands on experience in formulating and analysing problems, statistical thinking and learning can be much more easily achieved.