Objective of course
In empirical research, the objective is to analyze real life data to understand, explain and predict how various phenomena of interest work. This data based analysis is often called the “scientific approach” to theory building and theory testing. Consistent with this perspective, the objective of this course is to introduce a range of empirical research methods to develop a set of skills for data based scientific inquiry into operational challenges faced by both profit and non-profit organizations.

This course will help develop two primary skill sets:
- conducting independent research, critiquing articles and developing new research ideas,
- implementing a research study with the potential to submit in a journal.

Learning resources
The basic background text for the course is:

Chapters of this book are referred as HABBAT in the outline below. In addition to the textbook chapters, articles indicated in the course schedule will be progressively distributed over the semester.

Pedagogy
The student will be exposed to a few seminal articles that have been selected based on evidence of a novel approach to either domain knowledge and/or research methods. A significant component of the learning would be review/critique of empirical papers in Operations Management. The focus of such critique is to primarily assess the logical correctness of the study. The process of critiquing would enable discovery and learning of the key mechanisms of the empirical research methods.

Evaluation
Performance in the course will be evaluated as follows.

Article analysis and/or short presentations of the articles: (20%)
Every session will include discussion of multiple research articles that employ a specific research method. The discussion would involve brief summarization of the main topic (which should be familiar to all participants), a review/critique of the appropriateness of the research methods, and the discussion of the findings and limitations. The student needs to bring his/her own perspective on the ideas expressed in the research paper. A good review/critique poses interesting questions, cites additional literature, extends the models and stimulates further inquiry and class discussion.

Final Exam: (30%)
There will be a cumulative final exam covering all assigned articles and in-class discussions. The test will aim to test the student’s ability to understand the research problem and design an investigation approach to find answers to issues of interest. Taking good notes of all readings and lecture can be very helpful in doing well in this exam!
Term paper: (50%)
Participants will submit an individual term paper based on an empirical research. Toward this end, the instructor might be able to provide some datasets for developing a paper but it is expected of the students to become proactive in collecting appropriate data for analysis. Each student is encouraged to plan early about the paper and engage in data collection by the second quarter of the semester. Collecting and analyzing data on a topic of one’s individual interest can be very useful in effective learning. The term paper should be a short empirical research note, consisting of a brief description of the research question, a small literature review highlighting why the question is of interest, the data, the methodology, the analysis, discussion of the findings, and conclusions. The paper need not have the same level of rigor and comprehensiveness as that of a published empirical research paper. However, there should be the potential to publish in a good academic journal.

The deadline for the term paper proposals will be in the week after the last session of the course; the deadline to complete the papers will be 8 weeks after that. If the term paper is not completed in 8 weeks then an incomplete grade will be assigned; the incomplete grade can be revised if the paper is submitted within 16 weeks of the last session of the course. Failure to submit the term paper within 16 weeks will result in a failing grade.

Course Schedule:
The following course schedule will be maintained. Instructor may modify the schedule as necessary to enhance learning effectiveness.

Session 1: Overview of empirical research methodology
Readings:
Chapter 1 in HABBAT

Session 2: Qualitative research
Readings:
- Yin, R.K. (2003). Case Study Research: Design and Methods, SAGE Publications. This is a classic, short introduction to case study research. Read Chapters 1, 2, 4 and 5.
Session 3: Basic regression analysis
Readings:
Chapters 2 and 4, HABBAT.
  - Assignments in Excel/SPSS; (using suitable data)

Session 4: Regression analysis (I): Discriminant Analysis and Cluster analysis
Readings:
Chapter 5 and 8, HABBAT

Session 5: Regression analysis (II): Logistic Regression, Logit and Probit Analysis
Readings:
Chapter 5, HABBAT

Session 6: Factor analysis
Readings:
Chapters 3 HABBAT.

Session 7: Multivariate Analysis of Variance
Readings:
Chapter 6 in HABBAT.
• Assignments: ANOVA (Excel)

Session 8: Confirmatory Factor Analysis and Path Analysis
Chapters 10, 11, and 12 of HABBAT.

Session 9: Instrumental Variable Analysis

Session 10: Longitudinal Analysis: Panel data Analysis and Event History Analysis


(Note: Any of the above sessions can be substituted with one/two sessions on Secondary Data Analysis in it is felt appropriate!)