



EST 440: Interdisciplinary Research Methods

Syllabus for Spring 2020

Professor:	Suzana Brown
Classes:	T/Th 10:30 – 11:50, Academic building B207
Office Hours:	M/W 10:00 – 12:00 or by appointment, Office B310
Website:	https://sites.google.com/site/sunykoreaest-440/

Class description:

This class uses scientific research and related engineering technology problem-solving as a framework for the synthesis of diverse disciplines studied by students in the first three undergraduate years. It provides students with experience in team problem-solving. Students develop a proposal for interdisciplinary research or project to be carried out in the final semester of study.

During this course students will learn how to plan and design a research project, including identifying a research problem and sub-problems, conducting a literature review, determining a methodology for answering the questions presented, and developing hypotheses regarding the expected results or get preliminary results before the end of the semester.

Objectives:

During the course students will develop the following types of skills:

- 1) learn how to identify a specific research question
- 2) understand how to conduct literature review on the topic of interest
- 3) determine a methodology that will allow them to answer the chosen question
- 4) develop a structured, scientific mode of intellectual organization
- 5) utilize the resources available for research
- 6) learn organization and citation that are accepted within the relevant scientific community

Text

Two main texts for the class:

- 1) Leedy, Ormrod, “*Practical Research: Planning and Design*”, tenth edition, Pearson, 2012. ISBN-10: 0132693240, ISBN-13: 978-0132693240
- 2) Kevin Kelly, “*What Technology Wants*”, Viking, 2010, ISBN: 978-0670022151.

Course Work

Every week we will cover specific research topics in a lecture. There will be weekly homework and a term project. One mid-term exam will be given. There will be no final but there will be final project presentations during the last week of class. Class participation does not mean just coming to class. Student has to engage in the class activities.

Grading

Homework: 10%

Class participation: 15%

Midterm exam: 30%

Term Project: Paper (30%), presentation (15%)

Term project

The main outcome of this class will be a research proposal. This proposal will likely turn into the first chapter of your thesis or be the blueprint for a project or a paper. The proposal is also a basis for EST 441, where you will carry through to completion of the proposed research.

Students are supposed to work in teams and ideally teams should have 4 members each. Students are expected to propose a question of their own choosing and teams will be formed based on common interest. Each proposal is expected to be ~15-30 pages in length, with suitable references and high-quality analyses. Final presentations should be approximately 15 minutes (20 minutes with Q&A).

Plagiarism

Plagiarism is passing off some else's work as your own. It consists of copying, intellectual property theft, and unauthorized collaboration. Do not copy material from the web or other sources. Do not use someone else's ideas or work without sufficient attribution (this means you need to be careful and record "who, what, and where" when researching) (find examples from professional research work for referencing and use that) (do not cite generic websites – www.epa.gov – as that is a meaningless reference). Do not work with someone else if the work is supposed to be your own.

There are four reasons why plagiarism should be avoided:

- 1) University Policy
- 2) Intellectual Honesty (your name is on the paper, not the source you copy from)
- 3) Learning Process (explaining things in your own words causes you to think more and more completely about these concepts and facts)
- 4) We will catch you (there are dire penalties)

Term Schedule

The following is subject to change. Updates and changes will be announced in class and on the class web site as necessary. Additional reading will be assigned throughout the semester, announced in class and posted on the website. Except for the two books most of the other readings will be uploaded on the class web site: <https://sites.google.com/site/sunykoreaest440/>

Date/week	Topic	Comments
Feb 25	Introduction and history of research	Lecture
March 3	Identifying a research project	Discussion
March 10	Literature search and referencing	Lecture
March 17	Methodology (quantitative, qualitative and mixed)	Lecture
March 24	Define research questions and form teams	Each student present an idea Team formation
March 31	Different methodological solutions	Lecture
April 7	Proposal outline	Mini presentations
April 14	Starting with literature review	Lecture
April 21	Present one relevant research paper per team Individual reviews of relevant papers	Team presentations Individual presentations
April 28	Methodology and data visualization Survey/case study/interview methods	Lecture
May 5	Expected results and update of project progress	Discussion
May 12	Team work in class	Meetings
May 19	Proposal and presentation drafts	Team meetings with prof.
May 26	Practice and writing the final proposal	In class work
June 2	Final presentations: Open to public	In classroom
June 8	Correction day Thursday schedule	Attend 441 presentations