



Research Methods in Science in Engineering

Course Introduction

Slide 1

1

Disclaimer

Everything in this course is the sole opinion of the EMProfessor.

Slide 2

2

Outline

- About this course
- Rules, policies and procedures

3

About This Course

4

Course Logo



- Almost everything in research is built on the ability to communicate.
- This course will work hard to build and emphasize communication skills.
 - Graphics & Visualization
 - Writing & Speaking
- On top of communication skills is ethics and methods in research.
- Reward comes only after mastery of all these skills.

About This Course

Course Website:

<https://empossible.net/academics/research-methods/>

Expect this course to be more like a group discussion and workshop than a traditional course.

This class will be as much work as an ordinary course, but the material will be *life-changing*.

IMHO

The topics covered in this course are highly subjective.

Your course instructor is just one opinion on some very complicated topics.

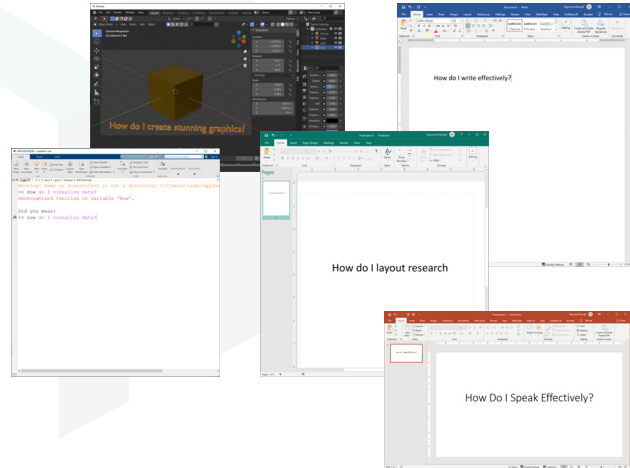
Do your own research, form your own opinions, and identify what practices work best for you.

Software You Will Need

- Blender
- MATLAB
- Microsoft PowerPoint (or equivalent)
- Microsoft Word (or equivalent)
- Microsoft Publisher (or equivalent)
- Microsoft Excel (or equivalent)

Course Topics

1. Professional Communications
 - a. Graphics and visualization
 - b. Writing
 - c. Speaking
 - d. Teaching
2. Graduate School & Research
 - a. Choosing a research topic and advisor/mentor
 - b. Searching and reading the literature
 - c. Proposing and defending your research
 - d. Doing research & the scientific method
 - e. Dissemination and the peer-review process
 - f. Psychological aspects of graduate school
 - g. Learning strategies
 - h. Data management
 - i. Responsible conduct and ethics
 - j. Planning
3. Business & Career Aspects of Research
 - a. General advices for graduate school
 - b. Intellectual property and commercialization
 - c. Branding yourself and your research
 - d. Professional networking
 - e. Write proposals
 - f. Project budgets
 - g. Business strategy
 - h. Entrepreneurship
 - i. Applying for faculty position
 - j. Career development



Rules, Policies & Procedures

Grading

Participation.....	30%	90% to 100%	A
Homework.....	30%	80% to 89%	B
Midterm Exam.....	20%	70% to 79%	C
Final Exam.....	20%	60% to 69%	D
		0% to 59%	F

11

Participation (30%)

- Ask questions!
- Respond to polls and give professor feedback
- Treat all correspondence as professional
- Show up to class on time and be prepared
- Do not disrupt the class, turn off mobile phones, etc.

12

Homework (30%)

- Homework is meant to practice and demonstrate skills
- Always attach a cover sheet
- Always attach quality checklists when applicable
- Staple at upper left corner
- Homework shall be neat, well organized, and problems solved in the order they were asked.
- Computer codes should be located in an Appendix at the end.
- Follow formatting instructions exactly.
- Do your own work!

Midterm Exam (20%)

- Write a letters paper.
- Apply what was taught in the course.

Final Exam (20%)

- Write a graduate research proposal.
- Present your proposal to the class.
- Apply what was taught in the course.

Flexibility in Assignments

- Strategic deviations from the assignments are allowed and encouraged!
- Deviations from assignments allow the student to customize their homework for their own purposes.
- Deviations that make the homework easier or exercise less skills taught in class are not allowed.
- **All deviations from the assignments must be approved by the professor via e-mail or in writing.**

Academic Dishonesty

- Do you own work.
 - Generate your own graphics, do your own writing, etc.
- Do not copy or borrow from any other sources or AI engines.
- **Zero tolerance policy.** All infractions will be reported immediately to the Office of Student Conduct and Conflict Resolution (OSCCR).