

1 Day 1

Introductory course to chemical engineering communications. Part 1.

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Expected to communicate. Grades are incentives for participation. 50% of the grade is participation

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Grading Policy

- Class Participation 50%
- Oral Presentation & Homework 25%
- Written Paper 25%

Homeworks

- Review of Journal Articles
- Oral Presentation of Data
- Open Source Journals, Journal Authorships, Guidelines vs. Reality
- Oral Presentation

Scientific Misconduct

- “Fabrication, falsification and plagiarism, and doesn’t include honest error or differences of opinion”
- Anything in the above is considered research misconduct
- Prohibited by federal (and state) laws
- Can lead to civil and criminal penalties
 - Debarment from funding eligibility
 - Retraction/Correction of published articles
 - Recovery of funds
 - Loss of employment and prison time. Prison time can actually happen

Falsification: Manipulating research materials, equipment or processes, or changing or omitting data or results such that the research is not accurately represented in the research record Plagiarism: Use of another person’s ideas, processes, results, or words without giving appropriate credit

Exclusions

- Limited use of identical or nearly identical phrases that are not substantially misleading or of great significance.
- Disputes among former collaborators.

NIH/NSF Guidelines

Ethics

2 Day 2

To get a general understanding, try a book

Where to search

- Journals
- Subscription Databases - Go here for high-quality information
- Google Scholar / PubMed are two free databases
- Wikipedia
- ...

Journals in electrochemistry

- Journal of Power Sources (#1 in the field)
- Journal of the Electrochemical Society

Things I learned about

- knovel

3 Sections in a journal article

- Title

Omit waste words in a title. It should be the fewest words that accurately describe the content of the paper. Titles are used to generate keywords in word searches.

examples:

1. Tracking cancer drugs in living cells by thermal profiling of the proteome
2. Engineering alcohol tolerance in yeast
3. Altered sterol composition renders yeast thermotolerant
4. Evidence for direct molecular oxygen production in CO₂ photodissociation

Keyword list: The keyword list provides the opportunity to add keywords

- Abstract Concisely states the principal objectives and scope of the investigation where these are not obvious from the title. Concisely summarizes results and principal observation
- Introduction
 1. Background Pertinent literature-original articles Common mistake is to introduce literature without mentioning the key findings of the cited work.
 2. Significance What is the need for the study? What is the impact to the field?
 3. Rationale Innovation Why this work?
- Materials and Methods It provides enough information for a skilled person to be able to repeat your study and results. - Basis for repetition of work by others Materials State the make and model of the materials used (including equipment)

Measurements and Statistical Methods Be precise in describing measurements and include errors of measurement. How many samples per condition? How many runs during analysis? Different from number of samples

Ordinary statistical methods (e.g. ANOVA, t-test) need not be mentioned in the methods section, but other 'specialized' tests need to be mentioned and references given. - In describing results (in Figure legends), the 'ordinary' methods will be mentioned.
- Results and Discussion Results Present your findings - Use of figures and tables is critical

Present the data after analysis in a condensed way Extract key trends and describe them - Use subtitles in results for individual findings/trends.

Discussion Based on the evidence shown in results, discuss

 - New principles established or old reinforced
 - New generalizations that can be deduced
 - Comparison with others' findings
 - Implications of the findings
 - Limitations of the work

Address the objectives of the study and the significance of the results
- Other: Figure legends should be brief but provide enough details to interpret the results without referring to the text Tables: When presenting data in tables...