24SB801 Searching, Reading, and Writing Scientific Articles (SRWSA) 3 Credits

Course Description:

In this course, students and teacher would unfold the different aspects involved in searching, reading,and writing scientific articles. The teacher as a facilitator would scaffold the scientific writing to the students and they are expected to collaboratively write, read, and review each other's work. In this journey, we (students and teachers) will familiarize ourselves with different tools and use some of them for each of the components of this course. Finally, this course can be an interesting course for those students who are into scientific writing and understanding the ecosystem of research papers.

Learning Objectives:

The main aim of this course is to scaffold the processes involved in searching, reading, and writing research papers.

- To be able to search a paper using queries
- To be able to read a paper from different lenses
- To be able to understand different components involved in writing
- To be able to write a basic research paper
- To be able to review a research paper
- To be able to respond to reviewers' comments in a formal response letter

Pedagogy:

Overall, the complete course would be based on active learning pedagogy that would be scoped under Bloom's taxonomy. Each of the lecture sessions would include different instances of active learning where students would be asked to work collaboratively in order to search, read, write, review, and respond under the ecosystem of a research paper.

Syllabus:

(12 Units; 30 sessions of 1.5 Hours each; Total of 45 Hours)

Unit 1: Introduction to Science and Research as a Systematic Approach				
Session (S_n)	Enactment date	Pre-session	Post-session	Comments
S1: Scientific thinking				
S2: What is research?				
S3: Searching, reading, and writing research articles				
Unit 2: Research Databases				
S4: Research papers, and grey and white literature				
S5: Common databases				
Unit 3: Classification of Articles				
S6: Indexing				
S7: Metrices related to articles				
Unit 4: Searching a Research Paper				
S8: Google Scholar and Elicit				
S9: Accessing an article				

Unit 5: Reading a Research Paper				
S10: Convergence and divergence				
S11: Reading lens				
Unit 6: Useful research tools				
S12: Tools (Reading & Indexing)				
S13: Tools (Writing & Reviewing)				
Unit 7: First three steps of writing a paper (Main idea, audience, and team)				
S14: Main idea				
S15: The audience				
S16: The team				
Unit 8: First walk (Pseudo abstract and a weighted outline)				
S17: Pseudo abstract				
S18: A weighted outline				
S19: A weighted to detailed outline				
Unit 9: Second walk (Second detailed outline, core tables, and figures)				
S20: A second detailed outline				
S21: Tables				
S22: Figures				
Unit 10: Final walk (Third outline, actual text with team, and revision followed by submission)				
S23: A third outline				
S24: Actual text				
S25: Revising and submitting				
S26: Final discussion on written text				
Unit 11: Reviewing a research paper				
S27: Reviewing each other's work				
S28: Discussion on reviews				
Unit 12: Responding to the reviews in a response letter				
S29: Response letter				
S30: Review response each other's response letter				

References:

Unit 1

- Dunbar, K., & Fugelsang, J. (2005). Scientific thinking and reasoning. *The Cambridge handbook of thinking and reasoning*, 705-725.
- Kuhn, D. (2011). What is scientific thinking and how does it develop?.
- Zimmerman, C., & Klahr, D. (2018). Development of scientific thinking. *Stevens' handbook of experimental psychology and cognitive neuroscience*, *4*, 1-25.

Unit 2

- https://ieeexplore.ieee.org/Xplore/home.jsp
- https://link.springer.com/
- https://www.elsevier.com/en-in

Unit 3

- https://editorresources.taylorandfrancis.com/understanding-research-metrics/#:~:text=Research%20metrics%20are%20quantitative%20tools,metric%20also%20has%20its%20limitations.

Unit 4

- https://scholar.google.com/
- https://elicit.org/

Unit 5

- Maynard, J. L., & Mildenberger, M. (2018). Convergence and divergence in the study of ideology: A critical review. *British Journal of Political Science*, *48*(2), 563-589.
- Kemeny, J., & Lowe, S. (1998). Schools of comparative housing research: From convergence to divergence. *Housing studies*, *13*(2), 161-176.

Unit 6

- https://endnote.com/
- https://www.mendeley.com/
- https://www.overleaf.com/
- https://www.latex-project.org/
- https://pitt.libguides.com/citationhelp

Unit 7 – 10

- Hyland, K., & Salager-Meyer, F. (2008). Scientific writing. *Annual review of information science and technology*, *42*(1), 297.
- Gopen, G. D., & Swan, J. A. (1990). The science of scientific writing. *American scientist*, *78*(6), 550-558.
- Katz, M. J. (2009). *From research to manuscript: A guide to scientific writing*. Springer Science & Business Media.
- Peat, J., Elliott, E., Baur, L., & Keena, V. (2013). *Scientific writing: easy when you know how*. John Wiley & Sons.
- Guilford, W. H. (2001). Teaching peer review and the process of scientific writing. *Advances in physiology education*, *25*(3), 167-175.
- Bazerman, C. (2019). Scientific writing as a social act: A review of the literature of the sociology of science. *New essays in technical and scientific communication*, 156-184.
- Lindsay, D. (2020). *Scientific writing= thinking in words*. Csiro Publishing.
- Woodford, F. P. (1968). Scientific writing for graduate students. A manual on the teaching of scientific writing. *Scientific writing for graduate students. A manual on the teaching of scientific writing.*

Unit 11

- https://authorservices.wiley.com/Reviewers/journal-reviewers/how-to-perform-a-peer-review/step-by-step-guide-to-reviewing-a-manuscript.html
- https://ahappyphd.org/

Unit 12

- https://onlinelibrary.wiley.com/doi/full/10.1002/stvr.1604
- https://apastyle.apa.org/style-grammar-guidelines/research-publication/response-reviewers

Course Outcome:

CO1:

Understand the scientific thinking and research paper's ecosystem

CO2:

Identify different conceptual and practical components involved in searching, reading, writing, and reviewing research papers

CO3:

Learn the basics of how to search, read, write, review, and respond to reviewers

Evaluation Pattern:

- No written mid- or final-examination
- Regular evaluation based on learning outcomes generated after following active learning pedagogy throughout the twelve units

Component	Weightage
Active participation in class	10%
Classroom-based outcomes like presentation, discussion, quiz, etc.	40%
Individual research paper written over the course	50%

Employability:

The course would help students to be an early-stage of researcher with a deep conceptual and practical understanding of a research paper's ecosystem. With the learned skills, they can find opportunities to enter into the world of research where they might have multiple options like higher studies, research positions in academia and industry, entrepreneurs harnessing the power of research, etc.