Research and Documentation

ST 529: Research and Documentation • June 11-22 • M-F (9-5)

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Office Hours: By appointment

Course Overview
Welcome to ST 529: Research and Documentation! This course has several goals. It is designed, first of all, to help you plan and write your independent study! In addition, it provides you with an overview of research and citation practices in various fields, with particular attention given to the sciences and science education. Finally, this course provides you with research strategies you can apply when teaching research and citation to your students. Course topics include, but are not limited to, the following:

- Formulating a research goal and research questions
- Strategies for planning and executing a research project (e.g., “storyboarding”) and for conducting research.
- Differences in research design (quantitative, qualitative, and mixed methods).
- Ethical research practices (including the use of human participants in research).
- Technology use in research (e.g., using electronic library databases and bibliographic software such as EndNote and Mendeley; using Google Documents and Word Reviewing for collaborative writing; creating PowerPoint presentations; using SurveyMonkey, Google Documents, and other online data collection programs, etc.).
- Correct use of research sources, including research citation.
- Strategies for writing and editing a research proposal or project.
In addition to class time discussing course content, a portion of each class will be designated as flexible “open lab” or “workshop” time for working on your independent studies.

**Required Texts**


*Other course readings will be given out electronically or in class.*

Note: While it is not required for this course, you might consider picking up a copy of the APA Publication Manual (6th edition).

**Technology**

For this class, we will be learning to use Mendeley bibliographic software, which can be downloaded for free from [www.mendeley.com](http://www.mendeley.com).

**Major Course Projects**

This course consists of five major projects.

- **IRB (“Research Ethics”) Training.** Students will complete the National Institute of Health’s (NIH) online tutorial on *Protecting Human Subject Research Participants*. Online modules can be found at the following address: [http://phrp.nihtraining.com/users/login.php](http://phrp.nihtraining.com/users/login.php)

- **Literature Review.** You will select a subject for your independent study, collect and scan/read through research on that subject, and write a review summarizing this research. *Literature reviews will be approximately 1100-1400 words*

- **Research Proposal.** You will write a proposal for an independent study or thesis. Proposals must have clearly articulated goals and research methods and a well-designed research protocol. * (Approx. 2200 – 2800 words)*

- **IRB Application.** All students must complete New Mexico Tech’s IRB application for using human subjects in a research study.

- **Oral Presentation.** Students will give a very short presentation on their project on the last day of class (w/ PowerPoint)

*Students who have already collected data for their independent studies may contract individually with me to complete their final write-up for this class. We will agree on an amount of writing comparable to the literature review and research proposal. All other assignments must be completed as indicated in the syllabus and assignment sheets.*

**Smaller Course Assignments**

- **Course Readings.** Assigned readings must be completed by class time on the day they are due. Additional readings will be distributed in class or via Moodle in PDF format.
• **Research Journal.** You will keep an informal research journal electronically (in Word) or in print (e.g., in a notebook). In your journal, you will include the following:
  o Notes on books and articles that you find on your subject
  o Ideas for your project
  o Brainstorming and storyboarding notes.

• **In-Class Activities/Storyboarding exercises.** Throughout the semester, we will have a number of activities completed in class or for homework (often in groups) that help us process course content and/or that demonstrate salient research principles. Students are expected to participate productively in these class activities.

• **Peer Review.** You will be asked to comment on your peers’ work in small writing groups. Your participation in informal peer review sessions will count toward your class participation grade.

**Grading Policy**

Your final grade is based on the number of points you earn. The total possible points is 530. Below, I’ve included a grading breakdown:

1. Research Journal 30
2. Literature Review 100
3. Research Proposal 200
4. IRB Training 50
5. IRB Proposal 50
6. Oral Presentation 50
7. In-class activities 50

**NOTE:** you must complete and submit each major assignment in order to pass this course.

The grading scale is as follows: A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), F (less than 60%).

**Course Policies**

*Participation.* You are expected to participate actively, constructively and cooperatively in all in-class and online activities—including whole-class and group discussions, individual/group presentations, peer workshops, individual/group conferences, and online discussion.

*Late Submissions.* You are expected to complete all assigned work in a timely manner. Please contact me about emergencies that prevent your completion of an assignment.

*Technology.* You are welcome to bring your laptops to class. I ask that while class is in session you refrain from any non class-related computer use (e.g., e-mail, texts, Facebook, etc.) during class. I will send a lot of important course information by e-mail. Please indicate an e-mail address that works well for you and check it regularly for the duration of the class.
**Ethical Conduct.** The administration, faculty, and your fellow students at New Mexico Tech expect you to act ethically. This includes not cheating, falsifying information, or plagiarizing, actions which may result in you receiving a failing grade for the class, or sending you before the Disciplinary Board for more severe treatment. Other non-ethical acts may also be cause for disciplinary action. See the *New Mexico Tech Student Handbook* for more information and a more complete description. ([http://www.nmt.edu/nmt-student-handbook](http://www.nmt.edu/nmt-student-handbook))

**Syllabus and Schedule.** The syllabus and schedule may be subject to change depending on the needs of the class. Therefore it is *extremely* important to check with me or with a classmate about assignments if you miss a class. *You are responsible for what goes on in class when you are absent!*

**NMT Writing Center & Oral Presentation Center.** Students are reminded that the Writing and Oral Presentation Center is open for graduate students. Representatives from the center will visit and participate in our class regularly. Students are welcome (and encouraged) to work on any class projects with center staff. Also, students are encouraged to visit the center for any writing or communication tasks related to their research or other classes. The Writing & Oral Presentation Center is located in 017 Fitch Hall (right next to my office). Students are welcome to drop in, though it is best to e-mail first: write@nmt.edu (Writing Center) and opc@nmt.edu (Oral Presentation Center).
Tentative Course Topics

Week 1—Overview of Research Strategies & Surveying the Literature

M June 11. Research Purpose, Research Ethics & Research Questions
Topics
- Overview of research approaches
- Discussion of research ethics and IRB
- Developing statement of purpose and research questions
- Storyboarding exercise 1: brainstorming purpose and questions
Assignments Due
- Research Design ch. 1, Practical Statistics ch. 1 (handout)

T June 12. Surveying the Literature
Topics
- Collecting and scanning the literature
- Using library databases
- Using bibliographic software
- Taking notes on and organizing the literature
- Start collecting literature on topic
Assignments Due
- Research Design chs. 2 & 7

W June 13. Overview of Research Methods: Quantitative, Qualitative, and Mixed
Topics
- Research Questions
- Discussion of qualitative, quantitative, mixed methods
- Data collection tools
- Online data collection (e.g., SurveyMonkey, Google Documents)
- Storyboarding exercise 2 & 3: mapping out the arguments on an issue, planning methods
Assignments
- Research Design chs. 8, 9, and 10
- Continue collecting research on topics
- Research notes – notes on secondary sources for your topic

R June 14. Conducting a Research Project; Analyzing Data
Topics
- Conduct research project in class
- Data Analysis
- Continue storyboarding exercise 3: plan methods for independent study
- Work on literature review
Assignments
- Readings from *Practical Statistics* (*handout*)

**F June 15. Writing the Literature Review and Citation**
- Structuring a literature review
- Quoting, paraphrasing, and summarizing
- APA citation
- Work on literature review

**Assignments**
- *Research Design* ch. 4, TBA
- Literature review -- annotated outline

**M June 18. Introduce Proposals; Literature Review Workshop**
- Research proposals: Nuts and bolts
- IRB proposals & application materials
- Literature review workshop

**Assignments**
- Draft of literature review

**T June 19. Proposal and Writing Workshops**
- Writing and time management strategies
- Writing Workshop: Turning storyboards into proposals

**Assignments**
- Very rough drafts of proposals

**W June 20. Peer Review and Teacher Feedback; Style, Mechanics, and Technical Editing**
- Peer review sessions
- Teacher feedback
- Tips for concision and clarity
- Editing strategies

**Assignments**
- Continue drafting proposal
- Start completing IRB materials

**R June 21. Preparing Presentations**
- Presentation strategies
- Creating effective PowerPoint presentations

**Assignments**
- Continue drafting proposal

**F June 22. Style, Mechanics, and Technical Editing**
- Finishing touches
- Present proposals
- Submit all final materials