

Course Title: Advanced Course In Research Methodology (Core/Elective Course)

Credits: 4

Days and Time: Tuesdays and Thursdays (11:00 a.m. to 1:00 p.m.)

Beginning: 15th January 2019

Instructor: Dr. Reema Mani

About this course: This is an advanced course on research methodology, with a greater focus on qualitative and mixed methods. Each methods session is followed by a presentation of articles (by students) that highlight some of the issues in the method or research carried out using the method discussed previously.

Objectives of the Course: After this course, the student will be able to:

1. identify and discuss types of research - quantitative, qualitative and mixed methods research,
2. choose a topic of research and write research questions and/or objectives, hypotheses,
3. choose from different research methods for a paper or proposal, design a plan, and explain the selection of the method/design,
4. carry out a data collection exercise such as observation, analyse it and write the analysis,
5. prepare a test/survey instrument and test for reliability/validity,
6. present a proto-research plan/proposal.

Student participation: Students are expected to read the materials listed for each class and come prepared for the sessions. Preparation is especially important for the presentations to be made by the students. Reading material for these presentations will be provided in paper or electronic format (pdf). In these presentations, the students should ideally focus on the use of the research method by the author(s), the recommendations by the article and possible ways of exploring the study's recommendations.

Session # Topic/Theme:

Session 1: Introduction - Basic research design - thinking about your research, Literature review, relation of theory, Research questions, hypotheses, operational definitions, variables, sampling

a) Creswell, J. W. (1994). *Research design: Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage. Ch. 1. Framework for the Study

b) Bryman, A. (2016). *Social Research Methods* (International Ed). Oxford: Oxford University Press. Part One 1-6, p.3-129

c) Adams, J., Khan, H. T. A., Raeside, R., & White, D. (2007). *Research Methods for Graduate Business and Social Science Students*. India: Response (for Sage)
Ch. 5. Sampling

d) Also recommended:

Hart, C. (2001). *Doing a Literature Search*. London: Sage

Session 2: Research Methods - causation vs correlation, ethics, main steps, experimental/quasi-experimental, introduction to differential and inferential analyses, reliability and validity in quantitative studies

a) Adams, J., Khan, H. T. A., Raeside, R., & White, D. (2007). *Research Methods for Graduate Business and Social Science Students*. India: Response (for Sage)

Ch. 11. Descriptive Quantitative Analysis

Ch. 12. Correlation and Regression

Ch. 14. Tests of Measurement and Quality

Session 3: Presentation by students

a) Lesh, R., & Lovitts, B. (2000). Research Agendas: Identifying Priority Problems and Developing Useful Theoretical Perspectives. In Anthony E. Kelly and Richard E. Lesh (Eds), *Handbook of Research Design in Mathematics and Science Education*. Mahwah, NJ: Lawrence Erlbaum Associates. (Ch. 3, p45-72) 507.1 Kel/Les - 11782

b) Lesh, R. & Clarke, D. (2000). Formulating Operational Definitions of Desired Outcomes of Instruction in Mathematics and Science Education. In Anthony E. Kelly and Richard E. Lesh (Eds), *Handbook of Research Design in Mathematics and Science Education*. Mahwah, NJ: Lawrence Erlbaum Associates. (Ch. 6, p.113-150) 507.1 Kel/Les - 11782

Session 4 : Design Based Research

a) Anderson, T. & Shattuck, J. (2012). Design-Based Research: A Decade of Progress in Educational Research?, *Educational Researcher*, 41(16), p. 16-25.

b) Sandoval, W. (2004). Developing Learning Theory by Refining Conjectures Embodied in Educational Designs, *Educational Psychologist*, 39(4), p.213-223

Session 5. Presentation by students

- a) Lesh, R. & Kelly, A. (2000). Multi-tiered Teaching Experiments. In Anthony E. Kelly and Richard E. Lesh (Eds), *Handbook of Research Design in Mathematics and Science Education*. Mahwah, NJ: Lawrence Erlbaum Associates. (Ch 9, p197-230)
- b) Confrey, J. & Lachance, A. (2000). Transformative Teaching Experiments Through Conjecture-Driven Research Design. In Anthony E. Kelly and Richard E. Lesh (Eds) *Handbook of Research Design in Mathematics and Science Education*. Mahwah, NJ: Lawrence Erlbaum Associates. (Ch. 10, p231-266)

Session 6: Introduction to Qualitative Research- approaches, theory and research, research questions in qualitative research, sampling in qualitative research

- a) Maxwell, J. A. (2005). *Qualitative Research design: An Interactive Approach* (2nd ed.). Thousand Oaks, CA: Sage
- Ch 1. A model for qualitative research design
Ch. 2 Goals: Why are you doing this study?
Ch. 3: Conceptual Framework: What do you think is going on?
Ch. 4: Research Questions: What do you want to understand?
- b) Also recommended:
Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.
Ch. 2. Philosophical Assumptions and Interpretive Frameworks. P15-41
- c) Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. Thousand Oaks, CA: Sage.
Ch. 22. Purposeful Sampling, p.230-245

Session 7: Presentation by students

- a) Zion et al (2004). Dynamic Open Inquiry in Biology Learning, *Science Education*, 88, p.728-753, doi: 10.1002/sce.10145
- b) Sandoval, W. A., & Millwood, K. A. (2005). The Quality of Students' Use of Evidence in Written Scientific Explanations, *Cognition and Instruction*, 23(1), p.23-55, doi: 10.1027/s1532690xci2301_2

Session 8. Coding

- a) Saldaña, J. (2013) *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA : Sage.
- Also recommended:
b) Boyatzis, R. E. (1998). *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks, CA: Sage.

Session 9. Coding exercise

(in-class activity - material will be provided or you may bring some data to code)

Session: 10. Phenomenology - philosophical phenomenology (introduction), phenomenological research in social sciences, phenomenology of science and phenomenology in science.

a) Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.

Also recommended:

b) Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. Thousand Oaks, CA: Sage. Ch. 6. Purposeful Sampling, p.104-109.

c) Ostergaard, E., Dahlin, B. & Hugo, A. (2008). Doing phenomenology in science education: A research review, *Science Education*, 44(2), p. 93-121, DOI: 10.1080/03057260802264081

Session 11. Presentation by students

a) Taylor, A. R., Jones, M. G., Broadwell, B. & Oppewal, T. (2008). Creativity or accountability? Scientists and Teachers' Perception of Science Education, *Science Education*, 92(6), p.1058-1075, doi: 10.1002/sce.20272

b) Cartrette, D. P., & Melroe-Lehrman, B. M. (2012) Describing changes in undergraduate students' perceptions of research activities, *Research in Science Education*, 42(6), 1073-1100, <https://doi.org/10.1007/s11165-011-9235-4>

Session 12. Ethnomethodology/ Ethnography

a) Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.

b) Atkinson, P. & Hammersley, M. (1994). Ethnography and Participant Observation. In Norman K. Denzin & Yvonna S. Lincoln (Eds.) *Handbook of Qualitative Research*. Thousand Oaks, CA : Sage. (Ch. 17, 246-261)

c) Naaeke, A., Kurylo, A., Grabowski, M., Linton, D., & Radford, M. L. (2011). Insider and Outsider Perspective in Ethnographic Research, *Proceedings of the New York State Communication Association*: Vol. 2010, Article 9. Available at: <http://docs.rwu.edu/nyscaproceedings/vol2010/iss1/9>

Also recommended:

d) Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. Thousand Oaks, CA: Sage. Ethnomethodology, p.110-117.

Session 14. Presentation by students

a) Hammersley, M. (2002). Ethnography and Realism. In Miles Huberman & M. B. Miles (Eds) *The Qualitative Researcher's Companion*. Thousand Oaks, CA: Sage. (Ch. 3, p65-80) 300.72 Hub/Mil 21775

b) Nasir, N. A., Hand, V. & Taylor, E. V. (2008). Culture and Mathematics in school: Boundaries between “cultural” and “domain”. *Review of Research in Education*, vol 32, p. 187-240, url: <https://www.jstor.org/stable/20185116>

Session 15. Grounded Theory

a) Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.

b) Corbin, J. & Strauss, A. (2015). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (4th Ed.) Thousand Oaks, CA : Sage.

Also recommended:

c) Charmaz, K. (2014). *Constructing Grounded Theory*. Thousand Oaks, CA: Sage.

Session 16. Presentations by students

a) Charmaz, K. (2005). Grounded Theory in the 21st Century: Applications for Advancing Social Justice Studies. In Norman K. Denzin & Yvonna S. Lincoln (Eds.) *The Sage Handbook of Qualitative Research*. (Ch. 20, p507-536)

b) Thomas, J., & Cooper, C. (2016). The Road to Reform: A Grounded Theory Study of Parents and Teachers' Influence on Elementary School Science and Mathematics, *Science Education*, 116(1), p29-42, doi: 10.1111/ssm.12151

Session 17: Narrative Inquiry

a) Creswell, J. W. (2013). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.

b) D. Jean Clandinin (Ed.) (2007). *Handbook of Narrative Inquiry: Mapping a Methodology*. Thousand Oaks, CA: Sage.

c) Connelly, M. F., & Clandinin, D. J. (2006), Narrative Inquiry. In Jennifer Green, Gregory Camilli & Patricia Elmore (Eds.) *Handbook of Complementary Research Methods in Education Research*. Published for AERA by Mahwah, NJ: Lawrence Erlbaum Associates. (ch. 28, p477-488)

Session 18. Presentations by students

a) Chase, S. E. (2005). Narrative Inquiry: Multiple Lenses, Approaches and Voices. In Norman K.

Denzin & Yvonna S. Lincoln (Eds.) *The Sage Handbook of Qualitative Research*. (Ch. 20, p507-536)

b) Elba-Luwish, F. (2007). Studying Teachers' Lives and Experiences. In D. Jean Clandinin (Ed.) *Handbook of Narrative Inquiry: Mapping a Methodology*. Thousand Oaks, CA: Sage. (Ch. 14, p357-382)

Session 19. Case Studies Research

a) Stake, R. E. (1995). *The Art of Case Study Research*: Thousand Oaks, CA: Sage.

b) Yin, R. K. (2009). *Case Study Research Design and Methods*. Thousand Oaks, CA: Sage.

Session 20. Presentation by students

a) Flyvberg, J. (2006). Five Misunderstandings About Case Studies Research, *Qualitative Inquiry*, 12(2), p. 219-245.

b) Park Rogers, M. A., & Abell, S. K. (2008). The design, enactment, and experience of inquiry-based instruction in undergraduate science education: A case study, *Science Education*, 92(4), p. 591-607, doi: 10.1002/sce.20247

Session 21 Mixed Methods Research

a) Creswell, J. W. & Plano Clark, V. L. (2011). *Designing and Conducting Mixed Methods Research* (2nd Ed.). Thousand Oaks, CA : Sage.

b) Teddlie, C. & Tashakkori, A. (2009). *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*. Thousand Oaks, CA: Sage. 300.72 Ted/Tas 20752

Ch. 8 Sampling Strategies for Mixed Methods Research

Ch.11 The Analysis of Mixed Methods Data

c) Burke Johnson, R., Onwuegbuzie, A. J., & Turner, L. A. (2007). Towards a Definition of Mixed Methods Research, *Journal of Mixed Methods Research*, 1(112), p. 112-133, doi:

<https://doi.org/10.1177/1558689806298224>

Session 22: Data Collection Methods in Qualitative Research - Observation, Interviews, Focus group interviews, field notes

a) Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods*. Thousand Oaks, CA: Sage.

b) Eggleston, J. E., Galton, M. J. & Jones, M. E. (1976). *Processes and Products of Science Teaching*. London: Macmillan Education Ltd.

Ch. 3. Describing the Process of Science Teaching - Specification of the Observation Schedule for the Evaluation of Science Teaching Methods p31-21

Ch. 4 The Development of the Science Teaching Observation Schedule, p34-35

Session 23 Observation - exercise In-class exercise

Session 24: Data Analysis- Coding exercise with observation data

Session 25: Data Organisation and Evaluation - analysis in context of methods, representation

a) Patton, M. Q. (2002). Qualitative Research & Evaluation Methods. Thousand Oaks, CA: Sage.

Session 26 Discussion (one-on-one discussion of proto research)

Session 27 and 28: Proto research presentation