Colleges of Information Science & Technology  
University of Nebraska at Omaha  
Last revised: August, 2010  
Doctoral Seminar:  
Methodological and Philosophical Foundations of Information Technology Research  
(Current Number/Title: ISQA 9010 - Foundations of IS Research)

Course Syllabus

Semester: Fall 2010. Classroom: PKI 172C; Meeting Time: TR 11:00am to 12:15pm  
Professor: Dr. Deepak Khazanchi; Office: PKI 172D. Phone/Voice: (402) 554-2029.  
Consultation Hours: By appointment only. E-mail: khazanchi@unomaha.edu

Course Description

Overview of Content and Purpose of the Course: The purpose of the course is to provide students with an understanding of the methodological and philosophical foundations of information technology research. The course covers the following areas: (1) information systems/technology and computing as an academic discipline including classic readings from reference disciplines, (2) philosophical and scientific foundations of science and IT research, (3) theory development and evaluation, and (3) a comprehensive survey of research methods and their applicability in the various IT research domains. Specific topics will include: philosophical issues in IS/T research, paradigms in IS/T research, conceptual development and validation, scientific inquiry and approaches, laboratory research, case study, interpretive studies (grounded research), field studies, survey research, action research, meta-analysis, simulation, AI and expert system research methods, research validation, and selected data analysis techniques.

For Whom Course is Intended: The course is intended for doctoral students in Information Technology or related areas. Advanced graduate students and students from other doctoral programs may find the course relevant.

Prerequisites of the Course: Doctoral student standing in the information technology area or permission of the instructor. An introductory understanding of “research methods” in business and scientific disciplines is essential. (The first class session will focus on a review of this basic material.)

Objectives: Upon completion of the seminar, students should be able to:

- Understand IT and its roots as an academic discipline and its relationship to reference disciplines
- Recognize and appreciate the classic articles, theories, frameworks, and themes in IT research
- Understand the nature of scientific research in general and the place of IT research within that context
- Understand the development, evaluation and validation of theory and concepts
- Understand the range of relevant research methods for IT research
- Understand how to choose an appropriate research method for a specific IT study

1 The syllabus is subject to change as announced in class.
- Appreciate the tradeoffs and challenges that are inherent in IT research
- Appreciate the ethical and legal issues involved in scientific research, particularly human subjects research

**COURSE PEDAGOGY AND REQUIREMENTS**

**Pedagogical Method(s):** The course uses a discussion-based learning approach and relies heavily on interaction between the student and professor as well as among students. The instructor plays a mentoring and facilitating role.

**Student role in the course:** The student participates in class discussion, serves as a lead discussant when assigned, completes written assignments and papers, and writes a comprehensive final paper. *Because this is a “research methods” doctoral seminar, preparation for and participation in discussions in class meetings is absolutely essential.*

**Instructional Materials:**
No specific textbooks will be used, although specific books may be made available on reserve or through the instructor for review by students. The course consists entirely of a list of required and supplemental (optional) readings. Readings will be updated as appropriate, to reflect new developments in the fields that encompass the IT academic disciplines.

**Course Assignments and Submission Guidelines:**
**Class Participation:** All students are required to read each article for the meeting and prepare a brief outline or “reading note” of the articles assigned for a meeting session. A one or two paragraph synthesis of the topic and a brief summary of each reading should be sufficient (see guidelines below). These outlines should identify the strengths and weaknesses of the research method and its application to IT research. Based on these, a final report comparing and contrasting the various research methods covered in the seminar will be required (see guidelines below). In the first few weeks, you will be required to prepare a reading note for all articles assigned for each session. Subsequently, each student will continue to prepare reading notes, but the brunt of the effort will be that of the lead discussant assigned by the instructor to readings. Please be prepared to share a copy of your assigned analysis with the other students when it is due.

**Guidelines for Reading Notes:** In general, your notes should be brief and address only the major points of an article or chapter. The idea is to convey the overall form and contribution of the material in one to two pages of text. Since this particular seminar is focused on different research approaches in IT, this analysis should identify the strengths and weaknesses of the research approach or method (even for conceptual papers) used in a paper and its application to IT research. Use the “miscellaneous” section to make any evaluative comments you feel need to be stated. If you do not have adequate background in a specific research approach, it is always useful to tie your analysis with readings from other sources. The following format is recommended:

- **Summary:** A concise summary of the research critique.
- **Statement of the Research Problem and Purpose:** Describe the problem as visualized by the authors, the motivation for researching the problem, and the importance of the topic to the IT profession.
- **Underlying theoretical model(s) used by the authors (if any):** Briefly summarize the conceptual basis of the research study (previously reported models, concepts, and research studies).
• **Description of the Research Procedures (if applicable):** What is the overall research method used by the researchers? Is a research model proposed? How do the authors propose to test their model and/or hypothesis? Is the research design and/or experimental design sound? Are there any flaws in the research design? If the reviewed article or chapter is purely theoretical such as in the case of comprehensive literature review or conceptual development piece, describe the concepts/theories/frameworks and the process of arriving at conclusions.

• **Data Analysis:** Provide a summary of the data analysis in your own words. Assess the soundness of the data analysis? Describe any flaws and deficiencies in the data analysis. Assess the soundness of the interpretation of data analysis. If the reviewed article or chapter is purely theoretical such as in the case of comprehensive literature review or conceptual development piece, be sure to analyze the validity of concepts/theories/frameworks and the logical coherence of the process used to arrive at conclusions.

• **Conclusions:** Describe the major findings, implications, and conclusions. Are the conclusions justified given the research design adopted and research procedures followed? Have the limitations been correctly recognized and addressed? Assess the soundness of the implications (as described by the authors) of this research for research and practice.

• **Researcher Reputation:** Assess the reputation of the researcher(s) given the information in the journal.

• **Miscellaneous notes:** Are their any other thoughts or comments you have on this and related work you have read?

**Leadership of class discussion:** When leading a discussion, a student will be required to do a substantive and in-depth analysis of the research articles in the specific section, particularly relating to a specific category of research method. Useful reference books and text books relating to a specific research method or approach are available in the library, via amazon.com and through the instructor for used in preparing and leading a discussion. Specific readings will be assigned to students in the class.

**Short Essays:** Each student will write two short essays. These “**think pieces**” are to be no more than three (3) single-space pages in length and are intended to encourage you to critically evaluate the assigned readings. Your essay may analyze a single article, or preferably, several or even all of the articles assigned for a given meeting. In your readings, look for themes, problems, opportunities, and nuggets of wisdom. Feel free to draw on your educational background, your professional experience, and your intuition. In your writing, you may take any perspective you feel is appropriate. I want to know what you are thinking as you read and assimilate the material in the course. Your essays will be graded on their ability to communicate thoughtful and relevant ideas in a clear and cogent manner. Of course appropriate citations need to be provided as relevant.

**Book Report:** Each student will write a **book report**. The book report will be no more than five (5) single-space pages in length. The goal of the report is to critically and thoughtfully summarize and integrate the ideas presented in the book of your choice with readings and ideas discussed in class. In addition, you will be asked to communicate your summary to the rest of the class in an informal presentation. The time allotted for your presentation is a minimum of 20 and a maximum of 30 minutes including discussion.

**Final Comprehensive Research Paper:** A doctoral seminar also requires **active participation in research**. Each student will be required to develop a research paper that applies one or more research methods to a specific research problem in the IT field. Students will select topics in consultation with the instructor. Frequent progress reports throughout the semester and a completed manuscript at the end of the term will be required. The essential parts of research paper for this class should follow the guidelines for a dissertation proposal and may include the following sections:

- Problem, hypothesis, or question
- Significant prior research
- Theory, framework, hypotheses (why it is worthy of doctoral research)
• Possible research approach or methodology
• Potential outcomes of research and importance of each

To ensure that every student will submit a passing paper, students must seek feedback on their early draft from the professor. A one page overview using the previous sections and a two page outline of the research paper is due in approximately 8 weeks from the start of the class. First drafts of completed papers are due in the 12th week. Early drafts will not be graded; however, feedback will be provided. An early draft is a not an outline, rather it is a full paper. The research paper should follow the “research paper guidelines” available separately from the instructor. A final paper will be due by the end of the semester. A good quality paper will need to at a minimum be of a quality that is required of good peer-reviewed conferences. If the student so desires, with some additional work after the semester (in the spring and/or summer) in close collaboration with the instructor, it is expected that the paper would be of quality accepted in IT research conferences such as AMCIS, ECIS, ICIS, ACM, IEEE, SIGCPR, WITS, SIGITPRJMT, SIGHCI, HICSS, etc.

**General Evaluation Guidelines:** Grades will conform to the degree to which each of the requirements stressed in class and this syllabus are met in the various assignments and final paper. To be eligible for a passing grade in the class, a student must complete all course requirements including, in-class assignments, homework, discussions, book report, and the research paper by their deadlines and to the satisfaction of the instructor. *Students are fully responsible for learning the content of this course and for material disseminated in the class. You are not released from this responsibility because of absences. Therefore, the instructor may lower a student's final grade because of excessive absences. Please adhere to deadlines.* All work is to be accomplished on an individual basis unless otherwise specified. In case of exigencies, students are advised to inform the instructor at least a week before a due date. Plagiarism and/or cheating (“a student who uses a dishonest or deceitful means to obtain a grade is guilty of cheating; a student who submits another's work as one's own without adequate attribution is guilty of plagiarism”) will be penalized with a failing grade per policies established in the Student Handbook.

**Grading:** The final grade is determined by using the following weights.
- Class Participation – 20%
- Leadership of class discussion (as assigned) – 10%
- Short Essays (2) – 20%
- Book report – 15%
- Final comprehensive paper (expected to be submitted to a conference or journal) – 35%

**A word on evaluation of each category:** A letter grade will be given for all submissions. In general, papers will be evaluated on the basis of currency of topic, application and integration of course concepts, organization of paper, thoroughness and quality of analysis, spelling and grammar, and originality of analysis. In addition, students will earn higher grades for successfully integrating information from additional sources and/or related articles. Grades for **class participation and discussion** will reflect the Instructor's perception of student quality and quantity of inputs to class learning (e.g., article preparation, research notes, read/discuss supplemental readings, etc.).

**Grading scale and criteria:**
The final grade is based on the percentage of points that the student receives out of the total possible points for the course. The guaranteed grade scale is shown in the following table.
<table>
<thead>
<tr>
<th>GRADE</th>
<th>POINT VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>92% &lt; x % &lt; 100%</td>
</tr>
<tr>
<td>A-</td>
<td>89% &lt; x &lt; 92%</td>
</tr>
<tr>
<td>B+</td>
<td>86% &lt; x &lt; 89%</td>
</tr>
<tr>
<td>B</td>
<td>82% &lt; x &lt; 86%</td>
</tr>
<tr>
<td>B-</td>
<td>79% &lt; x &lt; 82%</td>
</tr>
<tr>
<td>C+</td>
<td>76% &lt; x &lt; 79%</td>
</tr>
<tr>
<td>C</td>
<td>72% &lt; x &lt; 76%</td>
</tr>
<tr>
<td>C-</td>
<td>69% &lt; x &lt; 72%</td>
</tr>
<tr>
<td>D+</td>
<td>66% &lt; x &lt; 69%</td>
</tr>
<tr>
<td>D</td>
<td>62% &lt; x &lt; 66%</td>
</tr>
<tr>
<td>D-</td>
<td>59% &lt; x &lt; 62%</td>
</tr>
<tr>
<td>F</td>
<td>Less than 59%</td>
</tr>
</tbody>
</table>

OVERVIEW OF SEMINAR AND TENTATIVE SCHEDULE

I. Fundamental Concepts and Frameworks (Week 1 & 2 – 8/24 & 8/26; 8/31 & 9/2)  
II. Philosophy of Science and Social Science (Week 3 & 4 – 9/7 & 9/9; 9/14 & 9/16)  
III. Theory Building and Testing (Week 5 – 9/21 & 9/23)  
IV. Overview of Research Methods and Tradeoffs (Week 6 – 9/28 & 9/30)  
V. Experimentation (Week 5 – 10/5 & 10/7)  
a. #1 Short Essay is due (Week 5 – 10/7)  
VI. Laboratory Research (Week 7 – 10/12 & 10/14)  
VII. Field Studies & Experiments (Week 8 – 10/19 & 10/21)  
VIII. Survey Research (Week 9 – 10/26 & 10/28)  
IX. Case Research (Week 10 – 11/2 & 11/4)  
a. # 2 Short Essay is due (Week 10 – 11/4)  
X. Action Research (Week 11 – 11/9 & 11/11)  
XI. Meta Analysis (Week 12 – 11/16 & 11/18)  
XIII. Research Validation (Week 14 – 11/30 & 12/2)  
a. Research method book reports and presentation due as assigned (12/14 & 12/9)  
XIV. Additional Tools and Techniques (e.g., Simulation, LISREL, Design Science, etc.) (Week 15 – 12/7 & 12/9)  
a. Final papers due via e-mail and short individual paper presentation during finals week (12/14 & 12/16)  
XV. Ethical and Legal Issues in Research with Human Subjects (PS: This material may have already been covered in introductory CIST 90xx colloquia on teaching and research and is here for your information just-in-case you have not seen it before)  
a. Final papers due via e-mail and short individual paper presentation during finals week (12/14 & 12/16)
XVI. Writing and Publishing: From dissertation to tenure and beyond (PS: This material may have already been covered in introductory CIST 90xx colloquia on teaching and research and is here for your information just-in-case you need it)

READINGS

O. Introduction and Background Concepts (Week 1)
O.1 Khazanchi, D. “Methodological and philosophical foundations of information systems/computer science research” [PowerPoint presentation -- handout].
O.2 Khazanchi, D. “Philosophical Concepts and Issues in IT Research” [PowerPoint presentation -- handout].
O.3 Khazanchi, D. “Conceptual Validation” [PowerPoint presentation – handout]

I. Fundamental Concepts and Frameworks (Week 1 and 2)
➢ Resourced Based Theory of the Firm URL:
  http://www.valuebasedmanagement.net/methods_barney_resource_based_view_firm.html
  ➢ http://www.istheory.yorku.ca/rbv.htm


Additional References:
  Graduate School of Business, Harvard University.

II. Philosophy of Science and Social Science (Week 3 & 4)


Additional References Books and Articles:

III. Theory Building and Testing (Week 5)


References Books:

IV. Overview of Research Methods and Tradeoffs (Week 6)

Reference Books:

V. **Experimentation (Week 7)**


References Books:
• Campbell, D. and Stanley, J. Experimental and Quasi-Experimental Designs and Research, Rand McNally, 1963. [AVAILABLE FROM Dr. Khazanchi].

VI. **IS Laboratory Research (Week 8)**


VII. Field Studies and Experiments (Week 9)


VIII. Survey Research (Week 10)


IX. **Case Research (Week 11)**


**References Books:**

X. **Action Research (Week 12)**


**References Books:**
XI. Meta Analysis (Week 13)


References Books:

XII. AI & Expert Systems Research Methods (Week 14)


XIII. Research Validation (Week 15)


XIV.  Additional Research Approaches, Tools and Techniques (e.g., Simulation, LISREL, Design Science, etc.) (Week 16)


References Books:


XV.  Ethical and Legal Issues in Research with Human Subjects (Week 16) [ALL]


XVI.  Writing and Publishing: From dissertation to tenure and beyond (This material was largely covered in the introductory doctoral colloquiums on IT research, teaching and profession)


OTHER SUGGESTED SUPPLEMENTAL READING MATERIALS

The IS/IT field is constantly evolving in its use of research approaches. The following list consists of additional readings that students may consider exploring beyond the seminar and/or to complement the readings in the course.

**Fundamental IS/IT Concepts and Frameworks**

**Philosophy of Science and Social Science**

**Theory Building and Testing**
Overview of Research Methods and Tradeoffs


Experimentation


Action Research


Alternative Research Approaches (e.g., Qualitative Research, Grounded Theory,)


Philosophy of Science/Scientific Inquiry in IS


Survey Research


Case Research


Action Research


Meta Analysis