INFO I302
Human–Centered Research Methods In Informatics

Department of Human-Centered Computing
Indiana University School of Informatics and Computing, Indianapolis
Fall 2015

Section No.: Credit Hours:
Time:
Location: IT ___, Informatics & Communications Technology Complex
535 West Michigan Street, Indianapolis, IN 46202 [map]
First Class: August ___, 2015
Website: https://canvas.iu.edu/

Instructor: Meeta Pradhan, Ph.D. in Chemical Engineering, Research Assistant Professor
Office Hours: ______, ______, or by Appointment
Office: WK 306, Walker Plaza Building
719 Indiana Avenue, Indianapolis, IN 46202 [map]
Phone: (317) 278-0148 (Office)
Email: mpradhan@iupui.edu
Website: http://soic.iupui.edu/people/meeta-pradhan/

Prerequisites: INFO I211 (or instructor’s approval)

COURSE DESCRIPTION

This course surveys a broad range of research methods employed in Informatics, exploring their meta-theoretical underpinnings and exemplifying their application to specific research questions. This course is intended for Informatics students who need a grounding in research methods.

EXTENDED COURSE DESCRIPTION

Academic research is activity intended to advance and develop the body of human knowledge, through posing questions about the world and systematically identifying answers to those questions. Systematicity implies rigor, and a spectrum of different rigorous practices have been developed to answer questions in different fields of academic inquiry. These practices are known as research methods, and they govern the most basic research processes, from recording observations to analysis and interpretation. The nature
of the knowledge developed by a research study and the proper interpretation of the study itself depends on the choice of research methods it employs.

Informatics research relies on a broad range of methods, some of which come from the social sciences, that is, those academic disciplines such as psychology, sociology, linguistics, and anthropology (among others), which seek to understand and improve the world of human experience. Social science research methods vary on a number of dimensions: some involve highly detailed observations in a small number of specific circumstances (e.g., ethnographic observation of workplace interactions around a database system), while others require coarse observations of low detail from a large number of circumstances (e.g., a survey of a large user group); some involve deep interpretation engaging the researcher’s knowledge of the situation being observed (e.g., in a content analysis of information policy documents), while others disclaim relevance of the researcher’s specific knowledge of the situation (e.g. in quantitative studies of information traffic patterns).

No one method suffices to answer all questions within Informatics, and so researchers in this field need to be conversant with the full range of possibilities available to them. The primary goal of this course is to fill this need by surveying a broad range of research methods and their theoretical motivations and justifications, emphasizing fit of different research methods to different research questions. It provides a foundation for both interpreting and conducting many types of research, as well as a starting point for further study of specific research methods.

**Required Text(s):**

There is no required text for this course. There is a schedule of readings, available on the resources tab of the Canvas course site. Readings are due on the day assigned.

**Software used:**

**Teaching and Learning Methods**

1. Active learning (AL): Pre-lecture student discovery on topic
2. Lecture by instructor: Use of slides and audio-video aids
3. Self-learning 1 (SL1): Homework to outline portions of the textbook
4. Self-learning 2 (SL2): Homework to study topics covered in lectures
5. Lab-based learning (LBL): Gain practical experience of concepts covered in lectures
6. Peer-assisted learning (PAL): Case studies to analyze health information needs
7. Project-based learning (PBL): Group project with a midterm presentation
Learning Outcomes:

Upon completion of this course, the student will

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>RBT</th>
<th>PUL</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply a range of research methods in addressing the research questions of informatics</td>
<td>3</td>
<td>4</td>
<td>Observational assignments</td>
</tr>
<tr>
<td>2. Compare the advantages and disadvantages of different research methods (e.g., participant observation, nonparticipant observation, ethnographic interviews, focus groups, surveys and questionnaires, content analysis, pre-experiments, quasi-experiments, true experiments)</td>
<td>4</td>
<td>2</td>
<td>Research summaries</td>
</tr>
<tr>
<td>3. Match a research question with an appropriate method</td>
<td>2</td>
<td>2</td>
<td>Research summaries</td>
</tr>
<tr>
<td>4. Interpret the results obtained from a variety of research methods</td>
<td>5</td>
<td>1B</td>
<td>Observational assignments</td>
</tr>
<tr>
<td>5. Explain the relevance of operationalization, sampling, and their use in a variety of research designs</td>
<td>2</td>
<td>4</td>
<td>Discussion facilitation</td>
</tr>
<tr>
<td>6. Critique the research methods used in an informatics research study</td>
<td>5</td>
<td>2</td>
<td>Presentation</td>
</tr>
<tr>
<td>7. Apply ethical principles in structuring inquiry and selecting appropriate research questions and methods for investigating them</td>
<td>3</td>
<td>6</td>
<td>Final paper</td>
</tr>
</tbody>
</table>

RBT: Revised (by Anderson) Bloom’s Taxonomy

Principles of Undergraduate Learning (PUL):

Learning outcomes are assessed in the following areas:

1A. Core communication: written, oral and visual skills
1B. Core communication: quantitative skills
1C. Core communication: information resources skills
2. Critical thinking
3. Integration and application of knowledge
4. Intellectual depth, breadth, and adaptiveness
5. Understanding society and culture
6. Values and ethics

Some emphasis
Major emphasis
Minor emphasis
Assignments

There are eight regular assignments in this course. Five of these are research article summaries; the remaining five require empirical observations or analyses of example data. In addition, there are three discussion facilitation requirements, in which you facilitate class discussion a presentation requirement and a final paper. These assignments are described below, and all will be discussed further in class. The table below summarizes the assignments for the course, and the percentage of the final grade each is worth.

1. Research article summaries

These assignments require a summary of the research design used in a published research article. Different article summaries will focus on different aspects of the research methodology, such as the conceptualization of the research questions, the operationalization and measurement of its observations, their reduction to quantitative data, or the selection of analytical techniques. For these assignments, one must first identify a suitable research article; any published article in the field of Informatics using an empirical quantitative method is a potential candidate, but specific instructions will precede each assignment. The articles used for these assignments must NOT overlap with course readings.

2. Observational assignments

These assignments will exercise fundamental principles of observation, whether through the construction of instruments (survey questions and surveys), obtaining and recording observations (participant and nonparticipant observation, administering a survey), or interpreting the observations from a study.

3. Presentation

A short (10 minute) in-class presentation based on the final paper is required during the last week of class. Further instructions for this presentation will be made available closer to the due date.

4. Final paper

The final paper for this course should be a substantial critique of the research methodology of some meaningful unit of research in Informatics. This could include one or more of the research articles used in the research summary assignments, or a different body of work altogether; it may represented by a single (substantial) piece of research (e.g. a book or dissertation), or a series of articles on a related topic. The critique should address all relevant areas of the research methods, from the conceptualization through operationalization to measurement and analysis, and it should provide a reasoned argument for a position on the research methods employed and what they are able to reveal. The critique should conclude with recommendations for research methods to be used in possible follow-up studies intended to verify or elaborate the original research findings in
some way. All term paper topics must be approved by the instructor in advance of their completion.

**Grading**

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Quantity</th>
<th>Percentage</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research summaries</td>
<td>4 @ 5% each</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Observational assignments</td>
<td>4 @ 5% each</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Discussion facilitation</td>
<td>3 @ 5% each</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Presentation</td>
<td>1 @ 10%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Final paper</td>
<td>1 @ 25%</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Grading Scale:**

- **A+** 100% Professional level work, showing highest level of achievement
- **A** 93–99% Extraordinarily high achievement, quality of work; shows command of the subject matter
- **A–** 90–92% Excellent and thorough knowledge of the subject matter
- **B+** 87–89% Above average understanding of material and quality of work
- **B** 83–86% Mastery and fulfillment of all course requirements; good, acceptable work
- **B–** 80–82% Satisfactory quality of work
- **C+** 77–79% Modestly acceptable performance and quality of work
- **C** 73–76% Minimally acceptable performance and quality of work
- **C–** 70–72% Unacceptable work (Core course must be repeated for credit)
- **D+** 67–69% Unacceptable work (Course must be repeated for credit)
- **D** 63–66% Unacceptable work
- **D–** 60–62% Unacceptable work
- **F** Below 60 Unacceptable work

No credits toward major, minor, or certificate requirements are granted for a grade below C. No credits toward general education or elective requirements are granted for a grade below C–.

**Topic Outline, Reading Schedule and Assignment Due Dates**

The following week-by-week schedule indicates the sequence of topics and assignments in the course. In the assignments column, assignments labeled “S” and “O” indicate the due dates of research summary and observational assignments, respectively. Readings appear
on the day(s) they are assigned to be discussed in class. Note that Block III is as yet incomplete, and may be rearranged, subject to further notice.

*Discipline and Methodology* (Week 1)


*Ethics* (Week 2)


*Feminism* (Week 3)


Survey research summary due

*Ethnography* (Week 4)


Survey questions assignment due

*Surveys* (Week 5)

6


Surveys


Observational research summary due

Content Analysis (Week 6)


Interrater Reliability


Content Analysis in Context (Week 7)


Content as Data


Experimental research summary due (Week 8)

**Content as Dimensions**


**Cluster Analysis** (Week 9)


Content analysis coding assignment due

**Network Analysis** (Week 10)


**Experiments** (Week 11)


Survey response assignment due

Action Research (Week 12)


Participatory Design (Week 13)


Big data research summary due

Focus Groups (Week 13)


Ethnomethodology (Week 14)


History (Week 15)


Observational research assignment due

History (Week 16)


**Course Requirements**

To receive a passing grade in this course, students must complete all of the assigned work. However, turning in all of the work does not guarantee that one will pass the course. All assignments must be completed on the dates specified in this syllabus and late work may be penalized at the discretion of the instructor. If a student cannot complete an assignment (or presentation) on the assigned date, it is the student’s responsibility to discuss his/her situation with the instructor. Incompletes (grades of “I”) may be assigned in this course only in accordance with university policy, provided suitable grounds for a grade of “incomplete” is given.

Graded work in this course will be evaluated according to four criteria:

- Written and/or oral clarity, spelling and grammatical correctness
- Insight into the concepts and issues addressed in the course
- Originality in interpretation and analysis
- Appropriate use of relevant literature

Borderline grades will be decided on the basis of in-class contributions and participation throughout the semester.

**EXPECTATIONS, GUIDELINES, AND POLICIES**

**Attendance:**

A basic requirement of this course is that you will participate in all class meetings, whether online or face-to-face, and conscientiously complete all required course activities and assignments. Class attendance is required for classroom-based courses. It entails being
present and attentive for the entire class period. Attendance shall be taken in every class. If you do not sign the attendance sheet while in class, you shall be marked absent. Signing the attendance sheet for another student is prohibited. The instructor is required to submit to the Registrar a record of student attendance, and action shall be taken if the record conveys a trend of absenteeism.

Only the following are acceptable excuses for absences: death in the immediate family (e.g. mother, father, spouse, child, or sibling), hospitalization or serious illness; jury duty; court ordered summons; religious holiday; university/school coordinated athletic or scholastic activities; an unanticipated event that would cause attendance to result in substantial hardship to one’s self or immediate family. Absences must be explained with the submission of appropriate documentation to the satisfaction of the instructor, who will decide whether missed work may be made up. Absences that do not satisfy the above criteria are considered unexcused. To protect your privacy, doctor’s excuses should exclude the nature of the condition and focus instead on how the condition impacts your attendance and academic performance.

Missing class reduces your grade through the following grade reduction policy: You are allowed two excused or unexcused absences. Each additional absence, unless excused, results in a 5% reduction in your final course grade. More than six absences result in an F in the course. Missing class may also reduce your grade by eliminating opportunities for class participation. For all absences, the student is responsible for all covered materials and assignments.

Incomplete:

The instructor may assign an Incomplete (I) grade only if at least 75% of the required coursework has been completed at passing quality and holding you to previously established time limits would result in unjust hardship to you. All unfinished work must be completed by the date set by the instructor. Left unchanged, an Incomplete automatically becomes an F after one year. http://registrar.iupui.edu/incomp.html

Deliverables:

You are responsible for completing each deliverable (e.g., assignment, quiz) by its deadline and submitting it by the specified method. Deadlines are outlined in the syllabus or in supplementary documents accessible through OnCourse. Should you miss a class, you are still responsible for completing the deliverable and for finding out what was covered in class, including any new or modified deliverable. In fairness to the instructor and students who completed their work on time, a grade on a deliverable shall be reduced 10%, if it is submitted late and a further 10% for each 24-hour period it is submitted after the deadline.

**CODE OF CONDUCT**

All students should aspire to the highest standards of academic integrity. Using another
student’s work on an assignment, cheating on a test, not quoting or citing references correctly, or any other form of dishonesty or plagiarism shall result in a grade of zero on the item and possibly an F in the course. Incidences of academic misconduct shall be referred to the Department Chair and repeated violations shall result in dismissal from the program.

All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct and in particular the section on academic misconduct. Refer to The Code > Responsibilities > Academic Misconduct at http://www.indiana.edu/~code/. All students must also successfully complete the Indiana University Department of Education “How to Recognize Plagiarism” Tutorial and Test. https://www.indiana.edu/~istd You must document the difference between your writing and that of others. Use quotation marks in addition to a citation, page number, and reference whenever writing someone else’s words (e.g., following the Publication Manual of the American Psychological Association). To detect plagiarism instructors apply a range of methods, including Turnitin.com. http://www.ulib.iupui.edu/libinfo/turnitin

Academic Misconduct:

1. **Cheating**: Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.
   a. A student must not use external assistance on any “in-class” or “take-home” examination, unless the instructor specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.
   b. A student must not use another person as a substitute in the taking of an examination or quiz, nor allow other persons to conduct research or to prepare work, without advanced authorization from the instructor to whom the work is being submitted.
   c. A student must not use materials from a commercial term paper company, files of papers prepared by other persons, or submit documents found on the Internet.
   d. A student must not collaborate with other persons on a particular project and submit a copy of a written report that is represented explicitly or implicitly as the student’s individual work.
   e. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.
   f. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.
g. A student must not submit substantial portions of the same academic work for credit or honors more than once without permission of the instructor or program to whom the work is being submitted.

h. A student must not, without authorization, alter a grade or score in any way, nor alter answers on a returned exam or assignment for credit.

2. **Fabrication:** A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citation to the sources of information.

3. **Plagiarism:** Plagiarism is defined as presenting someone else’s work, including the work of other students, as one’s own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered “common knowledge” may differ from course to course.
   a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.
   b. A student must give credit to the originality of others and acknowledge indebtedness whenever:
      1. directly quoting another person’s actual words, whether oral or written;
      2. using another person’s ideas, opinions, or theories;
      3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
      4. borrowing facts, statistics, or illustrative material; or
      5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment

4. **Interference:** A student must not steal, change, destroy, or impede another student’s work, nor should the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any student’s grade or the evaluation of academic performance. Impeding another student’s work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain.

5. **Violation of Course Rules:** A student must not violate course rules established by a department, the course syllabus, verbal or written instructions, or the course materials that are rationally related to the content of the course or to the enhancement of the learning process in the course.

6. **Facilitating Academic Dishonesty:** A student must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct, nor allow another student to use his or her work or resources to commit an act of misconduct.
OTHER POLICIES

1. **Right to revise:** The instructor reserves the right to make changes to this syllabus as necessary and, in such an event, will notify students of the changes immediately.

2. **IUPUI course policies:** A number of campus policies governing IUPUI courses may be found at the following link: http://registrar.iupui.edu/course_policies.html

3. **Classroom civility:** To maintain an effective and inclusive learning environment, it is important to be an attentive and respectful participant in lectures, discussions, group work, and other classroom exercises. Thus, unnecessary disruptions should be avoided, such as ringing cell phones engagement in private conversations and other unrelated activities. Cell phones, media players, or any noisy devices should be turned off during a class. Texting, surfing the Internet, and posting to Facebook or Twitter during class are generally not permitted. Laptop use may be permitted if it is used for taking notes or conducting class activities. Students should check with the instructor about permissible devices in class. IUPUI nurtures and promotes “a campus climate that seeks, values, and cultivates diversity in all of its forms and that provides conditions necessary for all campus community members to feel welcomed, supported, included, and valued” (IUPUI Strategic Initiative 9). IUPUI prohibits “discrimination against anyone for reasons of race, color, religion, national origin, sex, sexual orientation, marital status, age, disability, or [veteran] status” (Office of Equal Opportunity). Profanity or derogatory comments about the instructor, fellow students, invited speakers or other classroom visitors, or any members of the campus community shall not be tolerated. A violation of this rule shall result in a warning and, if the offense continues, possible disciplinary action.

4. **Bringing children to class:** To ensure an effective learning environment, children are not permitted to attend class with their parents, guardians, or childcare providers.

5. **Course Evaluations:** Course evaluations provide vital information for improving the quality of courses and programs. Students are urged to complete one course and instructor evaluation for each section in which they are enrolled at the School of Informatics and Computing with the following three exceptions: (a) The student has withdrawn from the course; (b) fewer than five students are enrolled in the section (in which case anonymity is impossible); and (c) the section is a laboratory that must be taken with a course having a different section number. Course evaluations are completed at https://soic.iupui.edu/app/course-eval/. Course evaluations are open from the eleventh week. Course evaluations are anonymous, which means that no one can view the name of the student completing the evaluation. In addition, no one can view the evaluation itself until after the instructor has submitted the final grades for the course. In small sections, demographic information should be left blank, if it could be used to identify the student.
6. **Communication:** The instructor should respond to emails within 48 hours, excluding weekends and holidays, and announce periods of extended absence in advance. The instructor should provide weekly office hours or accept appointments for face-to-face, telephone, or teleconferenced meetings.

7. **Email:** Indiana University uses your IU email account as an official means of communication, and students should check it daily for pertinent information. Although you may have your IU email forwarded to an outside email account, please email faculty and staff from your IU email account.

8. **Disabilities Policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to reasonable accommodations. Please notify the instructor during the first week of class of accommodations needed for the course. Students requiring accommodations because of a disability must register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. The AES office is located at UC 100, Taylor Hall (Email: aes@iupui.edu, Tel. 317 274-3241). Visit [http://aes.iupui.edu](http://aes.iupui.edu) for more information.

9. **Administrative Withdrawal:** A basic requirement of this course is that students participate in all class discussions and conscientiously complete all required course activities and/or assignments. If a student is unable to attend, participate in, or complete an assignment on time, it is the student’s responsibility to inform the instructor. If a student misses more than half of the required activities within the first 25% of the course without contacting the instructor, the student may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and a student who has been administratively withdrawn from a course is ineligible for a tuition refund. Contact the instructor with questions concerning administrative withdrawal.

10. **Emergency Preparedness:** Safety on campus is everyone’s responsibility. Know what to do in an emergency so that you can protect yourself and others. For specific information, visit the emergency management website. [http://protect.iu.edu/emergency](http://protect.iu.edu/emergency)

11. **Student Advocate:** The Student Advocate provides assistance to students with personal, financial, and academic issues. The Student Advocate Office is located in the Campus Center, Suite 350. The Student Advocate may also be contacted by phone at 317 274-4431 or by email at studvoc@iupui.edu. For more information visit [http://studentaffairs.iupui.edu/advocate](http://studentaffairs.iupui.edu/advocate).

12. **Counseling and Psychological Services (CAPS):** Students seeking counseling or other psychological services should contact the CAPS office by phone at 274-2548 or email at capsindy@iupui.edu. For more information visit [http://life.iupui.edu/caps/](http://life.iupui.edu/caps/).
MISSION STATEMENT
The Mission of IUPUI is to provide for its constituents excellence in
• Teaching and Learning;
• Research, Scholarship, and Creative Activity; and
• Civic Engagement.
With each of these core activities characterized by
• Collaboration within and across disciplines and with the community;
• A commitment to ensuring diversity; and
• Pursuit of best practices.
IUPUI’s mission is derived from and aligned with the principal components—
Communities of Learning, Responsibilities of Excellence, Accountability and Best
Practices—of Indiana University’s Strategic Directions Charter.

STATEMENT OF VALUES
IUPUI values the commitment of students to learning; of faculty to the highest standards of
teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI
recognizes students as partners in learning. IUPUI values the opportunities afforded by its
location in Indiana’s capital city and is committed to serving the needs of its community.
Thus, IUPUI students, faculty, and staff are involved in the community, both to provide
educational programs and patient care and to apply learning to community needs through
service. As a leader in fostering collaborative relationships, IUPUI values collegiality,
cooperation, creativity, innovation, and entrepreneurship as well as honesty, integrity, and
support for open inquiry and dissemination of findings. IUPUI is committed to the
personal and professional development of its students, faculty, and staff and to continuous
improvement of its programs and services.