I575 - INFORMATICS RESEARCH DESIGN
Indiana University School of Informatics – IUPUI

Fall 2013

Course Details: 3 Credit Hours, Mondays 6:00pm – 9:15 pm
Room: IT 497, Section No. 24862
535 West Michigan St., Indianapolis, IN 46202 [map]
First class: Monday Aug. 19, 2013; Last class: Wednesday, Dec. 9, 2013

Instructor: Mark S. Pfaff, Ph.D.
Office Address: Office: IT 469 | Email: mpfaff@iupui.edu
Phone: (317) 278-4145
Office Hours: Monday 2pm-4pm and appointment

Teaching Assistant: R.J. Finch (rjfinch@iupui.edu)

Prerequisites: None (Not an extension of any undergraduate or graduate course.)

COURSE DESCRIPTION
Broad spectrum of research concepts, designs, and methodologies used in informatics research, from quantitative to qualitative research; from deterministic, hypothesis-driven experimental designs to a posteriori discovery through data mining; from philosophical foundations to practical applications. Provides the conceptual framework in which informatics graduate students may develop their own research agenda.

EXPANDED COURSE DESCRIPTION
The main focus of this course is informatics
• research design,
• research methodologies,
• descriptive and inferential statistics, and
• tools for data analysis.
This course examines the broad spectrum of research concepts, designs, and methodologies used in informatics research. Course content ranges from philosophical foundations to practical applications. The intention of this course is to provide a conceptual framework in which informatics graduate students may develop their research agenda. Informatics research, ranging from bioinformatics to human-computer interaction, draws on a range of disciplines, from chemistry to cognitive psychology. Consequently, this course strives to introduce the informatics graduate student to the gamut of research designs that can be encountered, from quantitative to qualitative research, from deterministic, hypothesis-driven experimental designs to a posteriori discovery.

INTENDED STUDENTS
This course is intended for all graduate students planning to undertake research in an area related to informatics including bioinformatics, health informatics, human-computer interaction, and media arts and sciences. Depending on their majors, students will hold undergraduate degrees in a wide range of disciplines in the arts and sciences, as well as medicine and nursing. Most of the students will have little or no experience conducting research. This course is intended as preparatory to undertaking research projects for Master’s theses and doctoral dissertations.
PURPOSE OF COURSE AND GENERAL INFORMATION

The purpose of I575 is to prepare you to design empirical research studies, to analyze the data you collect, and to write a thesis. You will build up an annotated bibliography of literature in your area of research, write a research proposal, and learn some basic statistical methods.

Students who are far enough along in their coursework and research to be developing their actual thesis or dissertation proposal may use this class as an opportunity to write and refine that proposal. However, students who are just getting started with their degree are advised against rushing too quickly into committing to a thesis or dissertation topic. Like any other course, I575 provides the opportunity to develop new skills, practice, get feedback, and learn from mistakes. I suggest writing your official thesis or dissertation proposal after you learn the concepts and develop the skills provided by this course.

Health Informatics students who are writing a Project, not a Thesis, may enroll in I505 Informatics Project Management instead of this course. Students in the MS in human-computer interaction program have a two-course option, which may be taken in place of I575 and Thesis/Project, if they do not intend to pursue a PhD or conduct empirical research professionally.

This course uses OnCourse extensively: http://oncourse.iu.edu/. Assignments are submitted through the Assignments section of OnCourse. Weekly quizzes are to be taken by 5:00pm before class in the Tests and Surveys section. All course communication occurs via OnCourse’s “Messages” function. You should set OnCourse to forward course emails to your personal email address as soon as possible (Messages -> Settings). You are responsible for monitoring course communication on a regular basis.

SYLLABUS

The current syllabus for I575 Informatics Research Design is available in OnCourse. Please read the syllabus carefully, and if you have any questions, do not hesitate to contact the instructor or teaching assistant. You are responsible for knowing the content of the syllabus and being prepared to be quizzed on it. This syllabus may be modified by the instructor at any time, but a current version will always be available on OnCourse.

COURSE MATERIALS

All reading materials for the course may be downloaded from the Resources folder on OnCourse. There is no need to buy any books for I575. Students are encouraged to become familiar with the readings at their earliest convenience to enhance retention.

Students should either buy SPSS (e.g., from the Barnes & Noble @IUPUI Bookstore for about $50 per year, license expires in July) or access it for free through IUanyWARE: http://iuanyware.iu.edu. Free open source alternatives to SPSS exist (e.g., PSPP, R); however, they have not been tested with all the homework exercises.

Sometimes the syllabus includes only a “presentation with audio” and not the original
reading materials to reduce the quantity of readings while maintaining the breadth of the course. The audio is redundant and only provided for those who prefer to learn by listening.

SELECTING A RESEARCH TOPIC AND RESEARCH ADVISOR

Before starting this course, or in the first couple of weeks of the semester, it is useful to have some idea about the research area of your thesis and to have had discussions with a prospective research advisor about that area. If the proposal you write in this class can provide material for your thesis or dissertation proposal, you will have made efficient use of your time, but do not feel pressured to determine that topic overnight, or even before the end of this course. Depending on your research interests and the relationship you develop with your advisor, the development of that topic often takes months of exploring, chasing down ideas, and changing directions – all of which are GOOD things to be doing as a graduate student, as long as you eventually settle on a solid and viable research topic.

If you are an Informatics graduate student, your thesis advisor should be a tenured or tenure-track faculty member in your specific program in the IU School of Informatics. Your research advisor is not to be confused with your academic advisor or program director. If you do not yet have a research topic or research advisor, you should start talking with faculty members, especially those in your program, and reading the literature in your area of interest.

It is typical to defend your thesis proposal in front of a committee composed of experts with PhDs in your research area before you start to collect any data. Your proposed committee is not your thesis committee until all members have expressed willingness in writing to join your committee and have read and approved of your proposal. This expression comes in written form as an email or letter to your research advisor.

YOUR RESEARCH PROPOSAL

As your statement of research interests gradually evolves into a research proposal, keep bringing your continuously revised research proposal to class so that you can keep receiving feedback from the instructor, teaching assistant, and fellow classmates. Failure to be prepared for class will lower your class participation grade.

Your proposal must be 10 pages (minimum) to 15 pages (maximum) in length, not including the cover page, table of contents, budget, references, and appendices. Proposals with less than 15 references suggest that the author has not sufficiently explored the relevant research literature for this topic. The annotated bibliography assignments help you incrementally build up a library of references and detailed summaries/critiques which greatly assist in developing your literature review. Therefore, do not fall behind on the annotated bibliography assignments, or it will slow down completion of your proposal as well. Outlines for different kinds of research proposals are provided in this syllabus.

ASSIGNMENTS

Only assignments submitted through the appropriate Assignments section of OnCourse will be graded. Do not submit assignments by email.
The file format for uploaded assignments is your last name followed by your program (e.g., Bio, HCI, HI, MAS), the course number, and the assignment title—for example, Wu_HCI_I575_Presentation.ppt or Patel_Bio_I575_ResearchProposal.pdf.

**QUIZZES**

Quizzes in the Tests and Surveys section of OnCourse constitute about 25% of your grade. They are timed, but open-book and open-note. The quiz timer starts as soon as you see the pop up indicating the number of minutes you have to take the quiz. The timer does not wait until you press “okay” but will start immediately. Once you begin the quiz, you cannot stop and restart it later, so be sure you are ready to take the quiz before you begin. Quiz questions are presented one at a time and you cannot go back to a previous question after you have answered it. The time limit on the quiz is set so that you have at least 90 seconds per quiz point, which for true/false or multiple choice is one question. Standardized tests usually give you about 30 seconds to answer a question, so you should have enough time to answer the question if you know the material thoroughly. However, it is not enough time to look up most of the answers in an “open book” fashion. Therefore, it is important to prepare for the quiz beforehand by underlining key points, taking notes, rereading key points, and taking the practice web quizzes when available.

To help you prepare for the weekly quizzes, there are some off-site practice quizzes such has the Babbie Web Quiz due before the second week. Both Babbie and Field provide practice web quizzes at their own sites. I do not collect the grades from off-site quizzes, but they can help you prepare for OnCourse quizzes, because some of the questions are similar.

**Quizzes are open for the full week preceding the class in which we will cover that lesson’s material, and must be completed by 5:00pm on the day of our class meeting.** Their purpose is to ensure you take the time to do the readings, take notes, and arrive in class prepared to discuss those topics.

The results of all statistics assignments except the first will also be recorded and graded using OnCourse’s Tests and Surveys. Only the first statistics assignment will be submitted through the Assignments section of OnCourse.

**STATISTICS SUPPORT**

The UITS Stat/Math Center provides consulting services regarding use of statistical and mathematical software packages. They help students who have questions on particular technical or methodological issues related to their research projects (e.g., how to fit an OLS with the intercept suppressed in SPSS). Students typically run into these issues when performing data analysis after having completed data collection for their thesis. The Center also provides some useful online documents:

- [http://www.indiana.edu/~statmath/stat/spss/index.html](http://www.indiana.edu/~statmath/stat/spss/index.html) (SPSS page)
- [http://www.indiana.edu/~statmath/stat/all/normality/index.html](http://www.indiana.edu/~statmath/stat/all/normality/index.html) (univariate analysis)
The UITS Stat/Math Center does not provide SPSS tutoring and will not assist students with homework. If you are having difficulty using SPSS, please email the instructor or teaching assistant with your question or to set up a meeting.

IT training and education offers free of charge to students STEPS classes providing an introduction to SPSS. The time and place of the course is listed under SPSS: The Basics at http://ittraining.iu.edu/. If needed, students should take the first course offered in the semester, so that the benefits may be acquired early before SPSS assignments are due.

The Online Study Questions for Andy Field’s book are available at the new website under “Interactive MCQs” (http://www.sagepub.com/field3e/).

COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>What’s due THIS week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lesson 1 – What’s Science? What’s Research? (No assignment due this week, of course). Introductions, Syllabus, Expectations of the course.</td>
</tr>
</tbody>
</table>
| 2    | Lesson 2 – Complete the following steps before our second class meeting, and don’t forget to take the quiz!  
There’s an extra quiz this week only on the syllabus. Study the syllabus and take the syllabus quiz in OnCourse Test & Surveys in addition to the usual quiz on the readings.  
Lesson 2 – Assignment 1: Endnote  
1. Download Endnote from http://iuware.iu.edu/ (free to students) and install on your computer  
2. Bring your laptop to class for an in-class tutorial from an Endnote Specialist  
Lesson 2 – Assignment 2: Research Topic Summary  
1. Explore the research interests of all the faculty members in your program.  
2. Identify possible research topics for your thesis or project.  
3. Identify a possible advisor.  
4. Describe your research interests in between 50 (and 100 (maximum) words.  
5. Submit this Research Summary via OnCourse (just copy and paste it into the textbox for the assignment – do not upload a document).
<table>
<thead>
<tr>
<th>Lesson 3</th>
<th>Lesson 4</th>
</tr>
</thead>
</table>

**10 sources in annotated bibliography due**

1. Read the *abstracts* of 25 papers related to your possible research topic. A good place to find papers is to search for topics or authors by using scholar.google.com. You can usually download papers as PDF files for free if you are on campus (or connected to campus via VPN – see http://kb.iu.edu/data/ajrq.html), and if you cannot find a paper, the ILLIAD Interlibrary Loan system is the next best option. You can expand your searches by seeing other papers that cite the paper that you are viewing, and you can see alternate versions of papers so that you can find a downloadable version if the first listed result is not easily downloadable.

2. For at least ten papers, add (1) the bibliographical entry, (2) major findings, and (3) the relationship between this paper and your research topic (e.g. why did you decide this paper was important enough to include?).

*See complete requirements and examples for this assignment on OnCourse*

**Hint for the Quiz**

- What is the relation between theory and qualitative studies? What is the relation between theory and quantitative studies? Between theory and hypotheses?

**15 sources in annotated bibliography due**
<table>
<thead>
<tr>
<th>Lesson</th>
<th>Title</th>
<th>Details</th>
</tr>
</thead>
</table>
- **Chapter 4: Web Quiz** (Some questions on these practice web quizzes will reappear in the Reading Questions in Oncourse Tests and Surveys)  
  *Hint for the Quiz*  
  - What are the criteria for nomothetic causality?  
  - What is the difference between a panel and a cohort study according to Babbie?  
  - What is a unit of analysis? |
- **Chapter 5: Web Quiz**  
  *Hint for the Quiz*  
  - What is the difference between content, construct, and criterion validity? |
- **Chapter 6: Web Quiz**  
  *10 slide research proposal outline presentation due and presented in class* |
Lesson 9

- Chapter 7: Web Quiz

**Hints for the Quiz**
- Under what circumstances is stratified sampling most useful?
- How do you interpret at 5% sampling error?

### 35 sources in annotated bibliography due

Lesson 10


- Chapter 8: Web Quiz

**Lesson 10 – Assignment 1: Research Ethics, Education, and Policy.**

1. Go to [http://researchadmin.iu.edu/EO/eo_citi.html](http://researchadmin.iu.edu/EO/eo_citi.html) and click “Yes,” then enter your IU username and password in the fields provided. Make sure that you use your IU username and password; do not create a new account. This will enable the Office of Research Administration to confirm that you have passed the course, when you submit your institutional review board application to them. Click on “Add a course”

2. For question one, select “Social/Behavioral Researchers” to register for the general course and then select one Responsible Conduct of Research (RCR) course in Question 4 depending on their academic program and research theme.
   a. Students in human-computer interaction and media arts and sciences will usually need to take the “Social and Behavioral Responsible Conduct of Research Course”
   b. Students in the health informatics and bioinformatics program will usually need to take the “Biomedical Responsible Conduct of Research Course”

3. Click “Submit” and proceed to take the courses. This will take about 2 hours.

4. Print to a PDF file the all of the above exam results showing your grade on each module. Upload the PDF file to the Assignments section of OnCourse.

**Continue working on research proposal, which is due in two weeks**
<table>
<thead>
<tr>
<th>Lesson 11</th>
<th>Topics: <strong>Fine-tuning Your Academic Writing</strong> and <strong>How Papers and Proposals are Reviewed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Continue working on research proposal, which is due next week</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Research proposal due</strong></td>
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</table>
Lesson 13
Note: Download the dataset on OnCourse to follow along with the SPSS readings in the book.

Statistics Assignment 2: Exploring Assumptions
One hundred photographs of human faces were presented to a participant on a computer screen in a forced choice categorization task. The photographs were first presented for 20 ms, then 40 ms, and finally 150 ms. Reaction time data was collected for each photograph in addition to the mean attractiveness rating and LDL cholesterol of each person in the 100 photographs.

1. Load Exploring_Assumptions.sav into SPSS.
2. Log (base 10) transform the reaction time data.
3. Explore the relation among variables, their skew, distribution, modality, normality, and outliers.

Answer questions in OnCourse Tests and Surveys about the results above.

Constructive critiques due
Form for use in preparing critiques is posted on OnCourse
The length of each critique including the instructions on the form must be at least 700 words and may not exceed 2,000 words.
Lesson 14


Note: Download the dataset on OnCourse to follow along with the SPSS readings in the book.

Hints for the Quiz

- What is the difference between point-biserial correlation and semi-partial correlation?
- What is the difference between $R$ and $R$-square?

Statistics Assignment 3: Correlation

A usability engineer collected data from 337 participants who had each entered nine words on an automatic text completion interface. The interface recorded the average number of errors and time for each participant to enter a word. The participants also took a survey on their experience with similar interfaces and on the usability of the interface. They also took a test on their knowledge about the interface. The usability engineer is concerned about the average usability rating of the interface and would like to improve it.

1. Load Correlation-Usability Test.sav into SPSS.
2. Calculate the bivariate correlation between errors, time, experience, knowledge, and usability.
3. Also calculate the descriptive statistics for each variable.
4. Inspect the scatter plot for pairs of variables.
5. Answer questions in OnCourse Tests and Surveys about the above.
Lesson 15

- Chapter 9: Interactive Study Questions (3rd ed. MCQ, Flash Cards)

Note: Download the dataset on OnCourse to follow along with the SPSS readings in the book.

Hints for the Quiz
- What information is needed to compute a confidence interval?

Statistics Assignment 4: Comparing Two Means
In the first experiment, couples were randomly assigned to one of two groups. One group read Women Are from Bras and the other group read Marie Claire. After reading the book, 10 participants from each group were tested for relationship happiness. No specific prediction was made about the effect of the reading material on relationship happiness.

1. Complete Smart Alex’s Tasks #1 and #2 (Data files are posted in this week’s folder on OnCourse)
2. Answer questions in OnCourse Tests and Surveys about the above.

Responses to reviewers and Revised Proposal due
### DUE DATE SUMMARY – This is probably the most important page in the syllabus!

<table>
<thead>
<tr>
<th>Week</th>
<th>Assignment Due at Beginning of Class</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>1</td>
<td>None</td>
<td>19-Aug</td>
</tr>
<tr>
<td>2</td>
<td>Quizzes on Syllabus and Lesson 2</td>
<td></td>
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<tr>
<td></td>
<td>Research topic summary</td>
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<td></td>
<td>Install Endnote</td>
<td>26-Aug</td>
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<tr>
<td></td>
<td><strong>No Class – Labor Day</strong></td>
<td>2-Sep</td>
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<tr>
<td>3</td>
<td>Quiz for Lesson 3</td>
<td>9-Sep</td>
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<td></td>
<td>10 entries in annotated bibliography</td>
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<td>4</td>
<td>Quiz for Lesson 4</td>
<td>16-Sep</td>
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<td>15 entries in annotated bibliography</td>
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<td>5</td>
<td>Quiz for Lesson 5</td>
<td>23-Sep</td>
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<td>20 entries in annotated bibliography</td>
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<td>6</td>
<td>Quiz for Lesson 6</td>
<td>30-Sep</td>
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<td>25 entries in annotated bibliography</td>
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<td>7</td>
<td>Quiz for Lesson 7</td>
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<tr>
<td></td>
<td>30 entries in annotated bibliography</td>
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<td></td>
<td><strong>No Class – Fall Break</strong></td>
<td>14-Oct</td>
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<tr>
<td>8</td>
<td>Quiz for Lesson 8</td>
<td>21-Oct</td>
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<td></td>
<td>In-Class Research proposal presentation</td>
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<tr>
<td>9</td>
<td>Quiz for Lesson 9</td>
<td>28-Oct</td>
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<tr>
<td></td>
<td>35 entries in annotated bibliography</td>
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<tr>
<td>10</td>
<td>Quiz for Lesson 10</td>
<td>4-Nov</td>
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<tr>
<td></td>
<td>CITI Research Ethics Training</td>
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<tr>
<td>11</td>
<td>Quiz for Lesson 11</td>
<td>11-Nov</td>
</tr>
<tr>
<td>12</td>
<td>Quiz for Lesson 12</td>
<td>18-Nov</td>
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<td></td>
<td>Research proposal Due</td>
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<td>The SPSS environment</td>
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<tr>
<td>13</td>
<td>Quiz for Lesson 13</td>
<td>25-Nov</td>
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<td></td>
<td>Constructive critiques</td>
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<tr>
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<td>Exploring the data</td>
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<tr>
<td>14</td>
<td>Quiz for Lesson 14</td>
<td>2-Dec</td>
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<td></td>
<td>Correlation</td>
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<tr>
<td>15</td>
<td>Quiz for Lesson 15</td>
<td>9-Dec</td>
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<td></td>
<td>Responses to Reviewers and Revised Proposal</td>
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<tr>
<td></td>
<td>Comparing two means</td>
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</tbody>
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Sample Mixed-Methods Research Proposal Outline

Definitions
Abstract
1. Introduction
1.1 Problem statement
1.2 Studies that have addressed the problem
1.3 Deficiencies in the past literature (A deficiency should show the need for quantitative and qualitative data in your study.)
1.4 The significance of the study for an audience (Who benefits from the study?)
1.5 Purpose of the study and reasons for using mixed methods
2. Review of the literature (including quantitative, qualitative, and mixed methods studies, if available)
2.1 Theoretical perspective
2.2 Hypotheses (or research questions)
2.2.1 Quantitative
2.2.2 Qualitative
2.2.3 Mixed methods
2.3 Scope and limitations
3. Methods
3.1 Type of research design
3.1.1 Challenges in using this design (optional)
3.1.2 Examples of using this type of design (optional)
3.2 Recruitment and sampling
3.3 Quantitative data collection and analysis
3.3.1 Data collection instruments and/or materials
3.3.2 Independent variables
3.3.3 Dependent variables
3.3.4 Data collection procedures
3.3.5 Data analysis procedures
3.4 Qualitative data collection and analysis
3.4.1 Data collection procedures
3.4.2 Data analysis procedures
3.5 Mixed methods data collection and analysis
3.5.1 Data collection procedures
3.5.2 Data analysis procedures
3.6 Validity approaches in both quantitative and qualitative research
4. Anticipated ethical issues
5. Timeline
6. Budget
References
Appendices with stimuli and instruments or protocols
Sample Quantitative Research Proposal Outline

Definitions
Abstract
1. Introduction
1.1 Problem statement
1.2 Studies that have addressed the problem
1.3 Deficiencies in past literature
1.4 The significance of the study for an audience
1.5 Purpose of the study
2. Review of the literature
2.1 Theoretical perspective
2.2 Hypotheses (or research questions)
2.3 Scope and limitations
3. Methods
3.1 Type of research design
3.2 Recruitment and sampling
3.3 Data collection instruments and/or materials
3.4 Independent variables
3.5 Dependent variables
3.6 Data collection procedures
3.7 Data analysis procedures
4. Anticipated ethical issues
5. Timeline
6. Budget
References
Appendices with instruments/protocols
Sample Qualitative Research Proposal Outline

Definitions
Abstract
1. Introduction
1.1 Problem statement
1.2 Studies that have addressed the problem
1.3 Deficiencies in the past literature
1.4 The significance of the study for an audience (Who benefits from the study?)
1.5 Purpose of the study
2. Review of the literature
2.1 Theoretical perspective
2.2 Research questions
2.3 Scope and limitations
3. Methods
3.1 Type of research design
3.1.1 Challenges in using this design (optional)
3.1.2 Examples of using this type of design (optional)
3.2 Recruitment and sampling
3.3 Qualitative data collection and analysis
3.3.1 Data collection procedures
3.3.2 Data analysis procedures
3.4 Validity approaches
4. Anticipated ethical issues
5. Timeline
6. Budget
References
Appendices with stimuli and instruments or protocols
REQUIRED MATERIALS
All reading material is available to registered students for download from links in this document.

Statistical Software
- SPSS for Windows or Mac.
- SPSS is installed in the labs on the first, second, and third floor of the IT Building, is available to students for purchase at the Barnes & Noble @IUPUI Bookstore for around $50, and is freely available from IUanyWARE.

RECOMMENDED MATERIALS

Research Methods

Statistical Analysis

Literature Review

Thesis Development

*IU Guide to the Preparation of Thesis and Dissertations*

**Writing**


**Institutional Review Board**

Protection of Human Subjects in Non-Biomedical Research

(If you research requires the touching or invasion of the participants’ bodies, read this instead: Protection of Human Subjects in Research)

- Exempt Research Checklist
- Protection of Human Research Participants Certification Test

**Additional Materials**


- Presentation


Purdue OWL (Online Writing Lab): [http://owl.english.purdue.edu/owl/](http://owl.english.purdue.edu/owl/)

APA Formatting and Style Guide: [http://owl.english.purdue.edu/owl/resource/560/01/](http://owl.english.purdue.edu/owl/resource/560/01/)
COURSE GRADE BREAKDOWN

1. Annotated bibliography  07%
2. Proposal presentation  10%
3. Research proposal  25%
4. Constructive critiques  10%
5. Response to critiques  10%
6. Statistics assignments  09%
7. Questions on weekly readings (i.e., OnCourse quizzes)  25%
8. Class participation  4%

Explanation:

- Each student must prepare and present a research proposal outline presentation, which is due by Week 8.
- Students will prepare an annotated bibliography, due in increments across several weeks.
- Each student must prepare a research proposal, which is due by Week 12.
- Each student is assigned reviewers, who will check the student’s research proposal by Week 13 and receive a grade for suggested improvements to the proposal.
- Students will write a formal response to the reviewers’ comments and submit a revised proposal, due Week 15.
- Statistics (and other) assignments are due the day of class by 6PM.
- There will be online questions on weekly readings in OnCourse Tests and Surveys. The questions be available online for one week before a reading assignment is due, until 5PM on the day that assignment will be reviewed in class. You may only take each quiz ONCE. Quizzes are open book and open note, but are timed according to the number of questions.
- Participation and engagement during class discussions:
  a. Responsive and knowledgeable of text material in discussions
  b. Evidence of preparation for class discussions
  c. Class attendance and promptness
  d. Deportment, consideration, and respect

GRADING SCALE

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>97 – 100</td>
<td>C+</td>
<td>77 – 79.99</td>
</tr>
<tr>
<td>A</td>
<td>93 – 96.99</td>
<td>C</td>
<td>73 – 76.99</td>
</tr>
<tr>
<td>A−</td>
<td>90 – 92.99</td>
<td>C−</td>
<td>70 – 72.99</td>
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<tr>
<td>B+</td>
<td>87 – 89.99</td>
<td>D+</td>
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COURSE OUTCOMES and COURSE OBJECTIVES

The overall goal of this course is to help prepare informatics graduate students to conduct their research. This goal will be met by

1. Providing a conceptual framework for research by introducing the basic concepts of research that apply to all disciplines;
2. Imparting a sense of the culture of research by presenting the purposes and principles of research generally valued by all investigators;
3. Fostering appreciation for the diversity of research by comparing the assumptions and intentions of different research paradigms;
4. Promoting confidence in conducting research by relating general principles to practical examples;
5. Engendering a critical perception of research by rigorously evaluating published studies;
6. Providing an understanding of statistics required to conduct quantitative data analysis;
7. Introducing SPSS as a package for statistical analysis;
8. Developing a more practical understanding of statistics by approaching statistical methods in the context of specific applications;
9. Introducing tools for qualitative data analysis.

LEARNING OUTCOMES

Knowledge

1. Introductory statistics, including sampling, correlation, and comparing two means
2. Introduction to numerous research paradigms, such as postpositivism, social constructivism, participatory/advocacy, and pragmatism
3. Distinctions and limitations of qualitative, quantitative, and mixed method research designs
4. Understanding validity and reliability
5. Scales and indices
6. Introduction to experiment design
7. Research ethics, education, and policy

Application

1. Preparing a research proposal
2. Conducting peer reviews
3. Creating an annotated bibliography
4. Creating and presenting a high-level presentation pertaining to research
5. Experience using SPSS
COURSE TEXT, READING, and CLASS DISCUSSIONS

Assessing Your Understanding of the Readings:

We will cover about two readings per week, or approximately 50 pages of material. Readings include chapters from the course text or journal articles. Each student should not only read the assigned material but arrive at a competent understanding of it before class. Three measures will be used to assess learning competency from the weekly readings:

1. **Weekly discussions**, directed by specific questions, will be integrated into the instructor’s lectures. During this time the instructor will challenge student comprehension, while adding practical applications to the theoretical content.

2. **Weekly quizzes** will be given to assess learning and comprehension, as well as to determine whether students are doing the readings.

3. **Practice exercises** in SPSS will be assigned.

4. Students must prepare a **research proposal** demonstrating a clear understanding and correct application of the concepts and methods covered in class.
COURSE POLICIES FOR ATTENDANCE, COMMUNICATION, AND ASSIGNMENT/PROJECT DEADLINES

1. **Missing class will affect your grade.** Students are allowed two (excused or unexcused) absences before their grade will be affected. In other words, whether you are sick or have personal problems or issues for missing class, it will amount to the same. Missing class means you do not show for the entire evening of class. The grade reduction policy works in this way.
   
a. On the third missed class your final grade will drop 5 percentage points
b. On the fourth missed class your final grade will drop 10 percentage points (i.e. one letter grade).
   
c. On the fifth missed class a grade of F will be issued for the course.

2. **Responsible for all materials or content:** All material covered in class or any assignments made during class are the students’ responsibility. In other words, if class is missed, the student is responsible to find out what was covered, whether course content, an assignment, quiz, or a revision to a due date, time, or place of an assignment. Get to know your classmates so you have one or more people to contact regarding missed material.

3. **Class Tardiness and Incompletes:** Because evening classes are so lengthy, coming late to class can also affect your grade. 15 to 60 minutes late will result in a note being recorded. An accumulation of regular tardiness could reduce your grade at the end of the class under the category of class participation, which is a percent of your final grade. Two 60 minutes (or more) late will count as one missed class and will then follow the same policy as above. Incompletes will not be issued except under extreme personal conditions that have been reviewed by the instructor and in some cases in consultation with the Dean’s Office.

4. **Deadlines:** All assignments must be ready to hand in at the designated time as stated on the syllabus.

5. **All assignments must be turned in via OnCourse.** Assignments will not be accepted via email.

6. **All course-related communication will occur via OnCourse.** Students are advised to set email from this course to automatically forward to an email address they regularly read. Do not expect the instructor to manually forward all emails to students’ personal email addresses (the reason is that students who do have forwarding turned on will receive two copies of any email sent via OnCourse). Likewise, all course-related email to the instructor should be sent via OnCourse.
UNIVERSITY POLICIES

1. There are a number of campus-wide policies governing the conduct of courses at IUPUI. These can be found at http://registrar.iupui.edu/course_policies.html.

2. University Attendance Policy: Attendance is required. The University regulations state, “Students are expected to be present for every meeting of the classes in which they are enrolled.” IUPUI faculty are required to submit to the office of the Register a record of student attendance through the semester, on which they will take action if the record conveys a trend of absenteeism. As a result, attendance will be taken in all classes.

3. Bringing your children to class: University Policy states that: “Children are not permitted to attend class with parents, guardians, or childcare providers. This conduct has the effect of unreasonably interfering with an individual’s work or academic performance creating an offensive learning environment…. A student must not violate course rules as contained in a course syllabus, which are rationally related to the content of the course or to the enhancement of the learning process in the course.” [Code of Student Rights, Responsibilities, and Conduct, page 29]

4. Academic Dishonesty, Lack of Integrity, and Plagiarism: Using another student’s work on a project or assignment, cheating on a test, or any other form of dishonesty or plagiarism will result in a grade of zero on that assignment and possibly an F in the course, and will be referred to the Dean of Students. All students should aspire to high standards of academic honesty. This class encourages cooperation and the exchange of ideas. For further reference, students may see:

5. Values and ethics: Profanity or derogatory comments about or towards the instructor or any member of the class will not be tolerated. Violating this rule will result in a warning and if the offense continues, administrative action will be taken.

6. Code of Student Rights, Responsibilities and Conduct: All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct of IUPUI. Students may access http://life.iupui.edu/dos/code.htm for further information regarding the above points.

7. 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 any accommodations needed for the course. Students needing accommodations because of a disability will need to register with Adaptive Educational Services (AES) and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by calling 274-3241. Visit http://aes.iupui.edu/ for more information.

8. Administrative Withdrawal: A basic requirement of this course is that you will participate
in all class meetings and conscientiously complete all required course activities and/or assignments. Keep in touch with the instructor if you are unable to attend, participate, or complete an assignment on time. If you miss more than half of the required activities within the first 25% of the course without contacting the instructor, you may be administratively withdrawn from this course. Example: *Our course meets once per week; thus if you miss more than two classes in the first four weeks*, you may be withdrawn. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and if you are administratively withdrawn from the course you will not be eligible for a tuition refund. If you have questions about the administrative withdrawal policy at any point during the semester, please contact the instructor.