IIST 608: Research Methods (4752)
Syllabus - Fall 2017 (Th, 4:15 - 7:05 PM in Husted 204)

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<th>Abebe Rorissa</th>
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<tr>
<td>Course role</td>
<td>Instructor</td>
</tr>
<tr>
<td>Office</td>
<td>Draper 140B</td>
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<tr>
<td>Telephone</td>
<td>518-442-5123</td>
</tr>
<tr>
<td>Office hours</td>
<td>Thursdays, 12:00–4:00PM; by appointment (phone or email/Blackboard)</td>
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<tr>
<th>Name</th>
<th>Teaching Assistant (TA)</th>
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2. Course Information

2.1 Course Description

Basic research methods and statistics for students entering the information science professions. Covers descriptive and inferential statistics through correlation and regression; basic research process methods, quantitative and qualitative, and the creation of grant or research proposals.

2.2 Blended Learning/Course

This section of IST 608 will be offered in a blended learning format. The class will integrate face-to-face lectures and discussions with online interactions and assignments. We will meet face-to-face for 12 of the course’s 15 sessions/weeks. A number of assignments and a portion of the class work will be completed independently using the Blackboard Learning System (BLS). If you are unfamiliar with Blackboard, please visit the Blackboard help pages for students (http://ondemand.blackboard.com/students.htm, https://help.blackboard.com/en-us/Learn/9.1_SP_12_and_SP_13/Student). During the first week of classes, you will complete an “Ice-Breaker” module that includes specific exercises and tasks that require the use of Blackboard. Part of our face-to-face sessions in the classroom will be spent discussing various topics, about the assignments and your online posts, plus working on statistics exercises. Please come to the face-to-face classes/sessions prepared to discuss both what you’ve read and written.

2.3 Objectives

It is expected that students who finish this course will have been exposed to, and be able to:

- Evaluate the design and results of published research that uses both quantitative and qualitative methods;
- Describe the strengths and weaknesses of a variety of research methodologies;
- Calculate basic descriptive statistics, and describe the purpose of bivariate and multivariate techniques in applied and basic research;
- Demonstrate ability to analyze the results of basic descriptive statistical techniques;
- Prepare a research/grant proposal that draws upon both research design and statistical knowledge gained in this class.

2.4 Class Meetings

Check the weekly course schedule (page 16 of this syllabus) for meeting dates as well as assignment, quiz, final examination, and project due dates. There will be 11 weekly statistics assignments, two quizzes, a final project (grant/research proposal), and final examination in the course. The final project (grant/research proposal) is usually due the last week of classes, but will be accepted earlier. Some of the assignments/projects will involve self and peer reviews/assessments. In the event of inclement weather, please call (518) 442-SNOW for announcements on university closings.

Each member of the class should bring a calculator to each face-to-face session and have a calculator ready when working on the statistics assignments, quizzes, and final examination as well as when studying. Square roots, factorials, and memory are the most sophisticated functions that will be needed, although a scientific calculator would be an advantage. A ring binder to store handouts is helpful.
2.5 Prerequisites
None. It is assumed that students have an understanding of basic concepts in mathematics. It is required that students NOT take IIST 608 during the first semester of their graduate work in information science.

2.6 Textbook
There is one required text: Brase & Brase for statistics, *9th edition*. Connaway & Powell is highly recommended since there will be readings from it. A copy of the Brase & Brase book is on reserve in the Dewey Library. The 2nd, 3rd, 4th, or 5th edition is fine for Connaway & Powell. Readings in the weekly course schedule should be read for the date listed. Have the Brase & Brase book with you every time you work on weekly statistics assignments, quizzes, and final examination. You should also bring it to each face-to-face class/session.


Additional readings from the professional and scholarly literature are also required. For a list of these readings, see section 6 of this syllabus. The additional required readings will be available in Blackboard. Where to Get the Books: The University Bookstore may have the required text (Brase & Brase) for the course, although you should be able to order it from other bookstores, walk-in or virtual (e.g., https://www.amazon.com/).

3. Technology Requirements

3.1 Internet access and Blackboard
Reliable Internet access is required to access the course’s Blackboard site. Because course materials include online videos from various sources, high-speed Internet access is recommended. Blackboard recommends a number of Web browsers. You can check whether your browser is supported here: https://help.blackboard.com/Learn/Instructor/Getting_STARTED/Browser_Support/Browser_Checker. You can also obtain Blackboard Mobile Learn: https://wiki.albany.edu/display/public/askit/Blackboard+Mobile+Learn.

If you don’t have Internet access or you are unable to access the Internet from your home, you may wish to consider using a computer on campus (here is a list of computer labs on campus: http://library.albany.edu/infcollections/labmaps, http://library.albany.edu/infcollections/) or in a public library.

If you experience problems accessing Blackboard, please read the Blackboard Help pages at: http://www.albany.edu/blackboardhelp (UAlbany) & http://help.blackboard.com (Blackboard). If you can’t find a solution on the Blackboard Help pages, please contact the University at Albany Information Technology Services (ITS) Help Desk at http://www.albany.edu/its/currentstudent.html or call (518) 442-3700.

3.2 Technology competencies
Spreadsheets: This class does require the use of spreadsheets for some statistical calculations as well as doing assignments and projects. Students in the class are expected to have some familiarity with spreadsheets, completing one or more assignments in a spreadsheet package of their choice (with Microsoft Excel the default package for students without a preference). Spreadsheet programs allow for univariate, bivariate, and multivariate analysis. The spreadsheet software is on many of the computers in computer labs on campus. The “Using Technology” sections at the end of each chapter of Brase & Brase give descriptions of how to use various statistical software packages.

**IST 608 personnel do not provide training in entry-level technology skills.** We assume that you possess basic computer skills, including the ability to browse the Web; create, send, receive, and read email, including...
attachments; access and respond to interactive web pages; use word processing functions such as copying, cutting, and pasting text; and the ability to open, edit, and store/save computer files. If you lack skills in these areas, we recommend that you take IST 523 and/or expect to devote extra time to learning these skills.

However, we do provide course-related help and personal assistance. As part of the “Ice-Breaker” module, you will also complete specific assignments/exercises that require the use of Blackboard. However, if you are relatively new to Blackboard, we recommend taking the tutorials available at: https://help.blackboard.com/en-us/Learn/Reference/Blackboard_Learn_Videos.

4. Assignments & Course Requirements

In this course, there will be 11 weekly statistics assignments, two quizzes, a final project (grant/research proposal), a final examination, a discussion question/post & a review of (a comment on) one other student's discussion post, and three assignments related to the final project/proposal (an article summary assignment, a prospectus, & a draft proposal) that involve self and peer assessment. Any changes to assignment due dates will be posted to Blackboard and a note will be sent via Blackboard Mail. Students should visit the “Assignment Area” folder of each module in Blackboard to read specific instructions and complete the assignments.

4.1 Assignments

Please note the following specifications for all the assignments for the course:

- See the “Weekly Course Schedule” for due dates of assignments.
- Papers (written assignments) should be word-processed, double-spaced, and with 12 point type the rule.
- Papers should be submitted, via Blackboard, to their respective drop boxes as electronic documents (single file for each assignment/project).
- All assignments should be completed and/or submitted before midnight on the due date.
- When you do quote or refer to a piece of writing, please follow APA, MLA, or Chicago Manual of Style. (See the Web for more information; search "APA style"; "MLA style"; or "Chicago Manual of Style"). This is your choice.
- Please make sure to paginate your papers.

Below are descriptions of some of the assignments/projects. For descriptions, requirements, and due dates of these and additional assignments, please visit the course’s Blackboard site and relevant weekly modules.

4.1.1 Final Project: Prospectus, Draft, and Final Proposal

The final project has three parts:

1. A prospectus for the project—one to two double-spaced pages.
2. A draft of the final paper which will expand on your prospectus and contain the major sections of your final proposal, including literature review, description of your population, variables, budget, limitations, data collection, and data analysis methods, as well as a final section on hypothesized findings and future research.
3. A final written proposal/paper—seven to ten double-spaced pages, plus letter, bibliography/references, and appendices/attachments as appropriate.

Throughout this course you should feel free to speak with the instructor about your final proposal/paper. The best way to find a topic will be to think about your interests, other courses you have taken, and previous literature. An hour or two spent looking at the most recent issues of College & Research Libraries, Library Trends, the Journal of the Association for Information Science and Technology, or Library & Information Science Research (only a partial list of the options) might give you a taking-off place, one of the two articles for the prospectus, and a topic to work with. Check the library for the recent issues of periodicals on the main floor.
4.1.1.1 The Prospectus

In one to two double-spaced, typed pages, please describe a research project that you might undertake and for which you are writing a grant proposal. Keep in mind that you will do no data gathering for this course, so you could choose any population and any data collection technique(s)/method(s), even if really doing the project would be too costly in time, talents, or funds. Keep in mind that one section of the final proposal is for a project budget, nonetheless. You may want to select a topic (as close as you can) that will really be your research project for a project at your work/internship, thus making double use of your course work here.

The prospectus should include:
- The research problem and question(s). Why does this research need to be done? What light will it shed on a theoretical or practical problem in information science?
- At least two research projects/sources (based upon journal articles) that have already addressed this or a related issue. What theory have these research projects/sources drawn upon? What questions did they address? How will your research be similar to or different from these? Please cite these journal articles appropriately in the text of your prospectus, and give complete citations in footnotes or endnotes or as a reference list.
- Proposed population. What is (are) the reason(s) for selecting the particular population?
- At this early stage, a list of variables that you will probably measure in your research.
- Proposed methods that you will use to collect and analyze your data.
- A one-paragraph section on what you expect your research to find (although you might be surprised).

The Prospectus and the Draft Proposal are two of the four assignments (the other two are an article summary assignment and a discussion question/post) that also involve self and/or peer reviews/assessment. For details on the self and/or peer review/assessment, please see section 4.2 of the syllabus.

4.1.1.2 The Draft Proposal

The draft proposal will follow the format of “The Final Proposal” below and will be an expanded version of your prospectus, requiring a minimum of 5 double-spaced pages, and containing the major sections of your final proposal, including:
- the outline for a letter to the agency from which you are asking for money (or a draft letter)
- a working title
- a three-part abstract (one paragraph with three parts: statement of the problem, methodology, selected hypothesized findings)
- a statement of the research problem including themes from the literature
- a statement of the purpose of your research and why the agency would want to fund this research
- a short review of relevant literature (you need to include research questions/hypotheses here)
- a brief methodology section including your proposed population, sample, list of variables and measures, and data collection and analysis methods
- strengths and limitations of your study
- strengths and limitations of the method you are using to collect data
- a start at the budget (or a description of the draft budget and table)
- a short description of hypothesized findings
- a short description of future research
- your list of ten (minimum) references/articles for the literature review
- draft appended materials (including data collection instrument(s), budget table, table of variables plus their descriptions and measures, etc.) which you will refine and include in the final proposal

You may put notes in italics (or highlighted) to the instructor for areas of concern or special attention.

4.1.1.3 Final Proposal/Paper Description and Checklist

In order to help you with the preparation of the final copy of your research proposal, the following checklist highlights required items for the paper. You do not need to turn this checklist in at the end of the semester. Use it to keep yourself on track. A rubric is used to grade the final proposal. Read the assignment again while preparing your final proposal/paper.
1. **Letter** to the institution that sent out the RFP (request for proposal). This will be one page, single spaced, introducing yourself, your project, the final budget amount, and some rationale about why you have selected this institution. You may find an actual organization that grants funds or make one up.

2. **Title** that reflects the research being conducted.

3. 200 word **abstract** of the proposed research in one paragraph including problem statement, method, & hypothesized findings. This should be a single-spaced paragraph.

4. **Statement of the research problem**— Description of the problem/issue that you seek to research. Why is it an issue? What makes it a worthwhile problem to research? Include a statement of themes and theory (if relevant) that are associated with the problem.

5. **Purpose statement.** You could do a single purpose or multiple bullets of purposes. This section should state why you believe the funding institution should give you money to complete this project—the “so what?” of the paper.

6. **Literature review.** This will be the area to cite at least ten research articles that form background and basis for your research—from your bibliography. Use the articles to support points made in your statement; avoid starting sentences with “Bond and Adams said…..”. Furthermore, this section could include your research questions or hypotheses. **Divide the literature review into subject areas, theoretic areas, and avoid “he said” “she said” paragraphs.** Discuss/focus on theory not people. Each subject area should have a separate heading in your final proposal/paper.

7. **Methodology** section that includes
   a. Population: a description of the population under study and why it was chosen
   b. Sample and sampling method including why this sample was chosen
   c. Human subjects review considerations and accommodations
   d. Variables and how they will be measured (with descriptions of each variable & mapped to survey or interview questions)
   e. Data collection method(s)
   f. Data analysis methods

Items (a) through (f) will each have their own subheadings in the methodology section.

8. **Strengths of your study.** Here you can include issues related to bias, validity and reliability. Discuss issues with the work that you propose to do.

9. **Limitations of your study.** Here you can include issues of bias, validity and reliability. Discuss issues with the work that you propose to do.

10. **Strengths of your method(s).** Here you should discuss the strengths of surveys, interviews, focus groups, or whatever method you are using to collect data.

11. **Limitations of your method(s).** Here you should discuss the limitations of surveys, interviews, focus groups, or whatever method you are using to collect data.

12. **The budget.** This is the dollar amount that you are asking for cost in time, labor, and materials to complete this project. Provide a justification of the amount requested for each budget line item and the budget should match the pro-posed methods. Include a description and discussion of the budget in the body of your draft/final proposal. The budget table should be one of the appended materials.

13. **Hypothesized findings** should deal with your educated appraisal of what you will find once the study is completed (based upon your readings, the theories of others, and your knowledge of the subject area).

14. **Future research possibilities** (if you or someone else were doing it). Give recommendations with respect to what future researchers (including yourself and others) need to do with regards to the research problem or related topics.
15. **Bibliography** of at least 10 articles you cited/referenced in your literature review. Use an established style manual (e.g. APA, MLA, Chicago, etc.).

16. **Appended materials** such as (you MUST have at least one data collection instrument):
   a. draft survey instrument or interview schedule/script or
   b. letters to potential interviewees or …

Rule #1 of appendices: Add no appendix that is not referenced in the body of the proposal and label them in the order they are referenced.

### 4.1.1.4 Research Prospectus Example

This prospectus is designed to be an example of the sort of work that you will hand in for your own project in IIST 608. It is an example of an action research project. *(Double space real one!)*

**Research Problem:** The University at Albany Library would like to be able to distribute electronically journal articles to science faculty members of its campus, eliminating print journals from the university library. Issues of copyright have been cleared with the various publishers. The librarians are concerned about how this new policy will be received by science faculty members. They are asking for grant monies in order to create, administer, and analyze a survey.

**Research Hypothesis/Question:** To what extent would the science faculty members at the University at Albany be receptive to the idea of electronic journal article dissemination? *(Alternately, this could be a research hypothesis that they will be receptive—depends upon how much previous research has been done.)*

**Previous Research:** There has been a trend over the last decade that would indicate that science faculty members not only have access to equipment that would make electronic dissemination possible but also that they are engaging in research and communications that already make use of electronic technologies. As of 1992, all science faculty at the University at Albany reported access to or ownership of personal computers and communications software (Jones, 1993). Furthermore, science faculty around the world have been reported to engage in scholarly debate and exchange of preprints over the Internet (Martin & Martin, 1994).

**Proposed Population:** In order to meet the needs of the University Library, the population for this research will be the science faculty members in the chemistry, physics, biology, and astronomy departments at the University at Albany. The research will be limited to full time faculty members (no part-time, adjunct or emeritus).

**Possible Variables:** The research will study (1) access to or ownership of personal computers and communications software, (2) present ownership of pertinent journals in individuals’ fields, (3) library use of appropriate scientific journals, and (4) willingness to receive articles electronically rather than in print format (including barriers to electronic delivery).

**Proposed Methodology:** A survey will be developed to measure access, ownership, use and willingness. Fifty percent of the faculty will be included in a representative random sample and be surveyed. Descriptive statistics will be reported for the study. *(Note that you could decide to do a census and survey everyone—probably a good idea when the population is small and you cannot expect a 100 percent response rate.)*

**Hypothesized Findings:** The researcher believes that scientists at the University at Albany will be receptive to electronic delivery of pertinent journal articles, paving the way for savings for the libraries and the university as a whole.

**References**


### 4.1.1.5 Writing Grant Proposals

The course’s Blackboard site has a number of readings and online resources on various aspects of proposal writing. In addition, try doing a search of the topic “grant writing” on the web. There are an enormous number of sites including materials on writing cover letters.
4.1.2 Weekly Statistics Assignments

These are statistics assignments that students need to complete each week in Blackboard, based on assigned readings (the Brase & Brase textbook and online), videos, and Web resources. These assignments will involve solving statistics problems relevant to each week’s topic.

They count for a total of 22% of your final course grade (2% per weekly assignment for 11 weeks). **If you fail to complete a weekly assignment by 11:59pm on the indicated due date, you will receive a grade of 0% for that assignment (no exceptions).** For the relevant readings and detailed descriptions/directions of the weekly statistics assignments, please visit the course’s Blackboard site.

4.1.3 Quizzes and Final Examination

Unlike the Weekly Statistics Assignments, the two Quizzes and the Final Examination are given in the classroom (face-to-face). Therefore, attendance on quiz and final exam days is mandatory. Please read the instructions before you begin working on the quizzes and final examination. Note that:

- You need to regularly see/check the weekly course calendar for the date of the quiz/exam
- While taking the quiz or final exam, you may use whatever notes/materials you choose including your class notes, the textbook, and other resources, both online and offline. However, you MAY NOT use other individuals for guidance
- Quiz #1 covers chapters 1 to 3 of the Brase & Brase (B & B) book
- Quiz #2 covers chapters 4 & 6 of the Brase & Brase book
- The Final Exam covers chapters 7 to 11 of the Brase & Brase book

4.2 Self and/or Peer Review/Assessment

Three assignments related to the final project/proposal (an article summary assignment, a prospectus, & a draft proposal) involve self and peer assessment while a discussion post (a short answer to a discussion question) will only require students to review one other student’s post and make a comment.

Completing the self and peer assessments is compulsory and the review/evaluation counts toward and will form part of the assignments’ grade. Please note that you will score/assess your group members AND yourself. While the self and peer assessment is designed for groups of students, each student will complete a self and peer assessment form in which he/she evaluates his/her work and the works of other members of their small group. The self and peer assessments are also meant to help you not only receive constructive feedbacks but also improve your assignment/project when revising it.

In addition to the three assignments that involve self and peer assessment, you will be required to post a short answer to a discussion question in the Week 8 Module. Your postings should be made by Thursday so that you will be able to review one other student’s post and review or comment on the post by Saturday. In your comment/response, you can give a feedback, ask a question, and point out a conceptual and/or factual error. Simply saying “I agree” or “I disagree” is not enough. You don’t have to wait until either Thursday or Saturday to post.

Please note that you will not be able to complete the self and peer assessment and/or post a peer review until after you have submitted the assignment or posted your own short answer. For detailed instructions on the assignments and the self and/or peer review/assessments, please read the descriptions of the assignments in this syllabus and/or visit the relevant modules in the course’s Blackboard site.

4.3 Examples of Quiz Questions

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
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<tbody>
<tr>
<td>Measures of Center</td>
</tr>
<tr>
<td>1. List the three measures of center.</td>
</tr>
<tr>
<td>a. __________________</td>
</tr>
<tr>
<td>b. __________________</td>
</tr>
<tr>
<td>c. __________________</td>
</tr>
</tbody>
</table>
d. Which measure of center is most sensitive to outliers (data points that fall far away from the center of
the distribution)? __________________________

e. If all three measures are numerically the same, what does this probably say about the shape of the
distribution?

Measures of Spread
2. We have looked at standard deviation, variance, range, interquartile range, and min/max all as measures
of the spread of a distribution. Answer these questions either with words or with a formula if you find that
easier or more intuitive.

a. What is the relationship between standard deviation and variance?
b. What is the relationship between range and min/max?
c. What is the relationship between range and interquartile range?
d. Give a one sentence definition for standard deviation? Give a second sentence or two to explain how
you could use standard deviations from two different data sets to compare these sets. What would
you be comparing in the two sets?

Exploratory Data Analysis
3. Greensmith College Study Groups
a. Use the following data set to construct a stem-and-leaf display.

The following data points were collected at Greensmith College. They concern the number of hours that pairs
of undergraduate students spent doing group projects in the campus library over the course of the last two
months of the semester.

```
63 10 26 45 45 59 50 51 12 29 32 44 47 58 59 51 14 19 41 42
15 15 52 17 20 22 29 52 44 36 23 37 23 49 45 23 38
```

b. Create a box-and-whisker plot for the Greensmith College data set.
c. What informational differences are there between the stem-and-leaf and box-and-whiskers? What do
you gain and lose between the two models? (Four or five sentences)
d. Write a paragraph (5 or 6 sentences) describing the center, spread and shape of the data set. Be as
numeric as you can, given the information that you have. (Do not compute variance or standard
deviation for this problem.)

Probability

Probability Matrix A displays data from the reading preferences assessment of four groups of adult readers (A,
B, C, D). Individuals were asked to state their preference in type of reading materials by genre. Thus, 20
people in group A preferred novels, 4 preferred mysteries, and 1 preferred poetry. Use the matrix to answer
questions a through e. Show your work for partial credit. Do not express fractions as decimals. Unsimplified
fractions are sufficient.

a. Compute marginals (column & row totals) and n.

```
<table>
<thead>
<tr>
<th></th>
<th>Novel</th>
<th>Mystery</th>
<th>Poetry</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>20</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>16</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>D</td>
<td>11</td>
<td>0</td>
<td>14</td>
</tr>
</tbody>
</table>
```

b. P(novel, given A) = ____________
P(mystery, given C ) = ______________
P(poetry, given B or D) = ____________
P(not novel, given A or C) = ______________

c. P(not novel and D) = ____________
P(not C and mystery) = ______________
P(A, given novel) = ______________
P(D, given mystery or poetry) = ____________
d. Compute \( P(\text{mystery or novel}) \) using the addition rule \( P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) \)

e. Compute \( P(\text{mystery and novel}) \) using the multiplication rule \( P(A \text{ and } B) = P(B) \cdot P(A, \text{ given } B) \)

**Normal Distributions**

For each of the following problems (1) draw a normal curve, (2) compute \( Z \) score(s), and (3) find the indicated probability under the curve using the table provided. For all problems (a through f) \( \mu = 25 \) and \( \sigma = 2.5 \)

\[
Z = \frac{X - \mu}{\sigma} \quad Z_x = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}}
\]

a. \( P(X < 30) \)

b. \( P(30 < X < 35) \)

c. \( P(23 < X < 24) \)

d. \( P(23 < \bar{X} < 24) \) where \( n = 9 \)

e. In two or three sentences explain why the probabilities in parts c and d are not the same.

**Estimation**

A group of graduate students has been asked to estimate the population parameter (\( \mu \)) for number of hours that professors spend counseling students about their schedules. The students randomly polled 100 faculty members and found out that they had an average (\( \bar{X} \)) of 8.5 hours per week and a standard deviation (s) of 4 hours among them.

1. Using the data above create an 80% confidence interval for the true population parameter (mean) for the number of hours that faculty members spend counseling. Remember that a confidence interval is defined as the range from sample statistic minus the maximal margin of error (E) through the sample statistic plus the margin of error. E in this case is defined as \( E = t_{\alpha} \frac{s}{\sqrt{n}} \)

and \( t_{0.80} \) is 1.292 for an 80 percent confidence level (d.f. = 99).

2. Compute the range of the confidence interval (max minus min): _______________________

3. Now compute a 99% confidence interval for the population mean for the same data. \( T_{0.99} \) is 3.499 (d.f. = 99) for a 99 percent confidence level.

4. Compute the range of the confidence interval (max minus min): _______________________

5. Explain in mathematical terms why the answers in #2 and #4 are not the same. What is the difference between an 80% and a 99% confidence interval in terms of the percentage that you wish to be WRONG?

**Hypothesis Testing**

Based upon a survey of special libraries in North America, the average budget was 67,000 dollars a year, with a standard deviation of 3,600 dollars. A sample of 52 libraries in Massachusetts was examined which had an average budget of 59,000 dollars. Conduct hypothesis tests to see if the Massachusetts budgets were significantly less than the national average.

1. State the null hypothesis:

2. State the research/alternate hypothesis:

3. Compute the test statistic for \( \bar{X} \) where \( z_x = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}} \)

4. Find/estimate the p-value for the test statistic you calculated in #3 above _______________________

5. Would you reject or fail to reject your null hypothesis at an alpha of .01? _______________________

6. Would you reject or fail to reject your null hypothesis at an alpha of .05? _______________________

7. In two or three sentences explain in plain English what your findings mean.

**Bivariate Regression**

Answer the following questions about bivariate regression.

1. Identify the specified elements in the following bivariate regression equation. \( Y = 3.6 - 0.5X \)

a. Slope ______________________
b. Sign of the slope ______________
c. Y intercept ______________
d. Independent variable ______________
e. Dependent variable ______________
f. For x = 2, predict y. Y = ____________
g. If the r for this equation were calculated at .96, how much of the correlation between the two variables is explained by the equation? ______________
h. How much of the variability between the two variables is NOT explained? ______________
i. In the space below, draw an x/y axis and graph the line for this linear regression. Identify the two points with (x, y) coordinates. Make one of the points the y intercept.

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Variable 2</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>C2</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>-.33</td>
<td></td>
</tr>
<tr>
<td>C3</td>
<td>-.96</td>
<td>.22</td>
</tr>
<tr>
<td>C4</td>
<td>-.33</td>
<td>.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.72</td>
</tr>
</tbody>
</table>

Correlation and Regression short answers
One sentence answers, please.
1. What is the difference between correlation and regression?
2. What is the difference between bivariate and multivariate regression?
3. Why might you decide to eliminate one variable from a multivariate regression research project? (There are many answers to this; give at least one reason)
4. Draw a picture of a positive correlation on an x/y axis. Label the axes and the y intercept. (You can do this without any numbers; just draw the line and an arrow to the intercept.)

A correlation matrix
Study the following correlation matrix and then answer the questions that follow.

1. The strongest correlation is between which two variables in the matrix? _____ and ________
2. The weakest correlation is between which two variables in the matrix? _____ and ________
3. Identify the correlation in the matrix that has an R^2 of approximately 50%. _____ and ________
4. Examining the matrix you note that variable C1 is negatively correlated with all the other variables. In two or three sentences explain what this means. You can give an example if you wish.
5. If you were to run a bivariate regression on any two variables in the matrix and you were looking for the greatest predictive power, which two variables would you use? Why?

4.4 Efforts Expected
This class meets for approximately three class contact hours each week (for face-to-face sessions). Students can expect to work 3 to 4 hours per week for each credit hour. This means students may spend about 9 to 12 hours a week on readings (online and otherwise), assignments, studying for quizzes and final exam, and other activities. The instructor and TA want students to succeed and we are available to help. Students who are having problems or find themselves spending substantially more than 12 hours on average per week or falling behind are strongly urged to contact the instructor as soon as possible. In addition to comprehending the subject matter, students are expected to develop or refine various professional skills, including appropriate use of technology.

4.5 Style Manuals & Guidelines
In written reports, students are required to cite sources according to the format rules in either the APA or Chicago (Turabian) or MLA style manual (not all of them in the same assignment/project):


Style manuals are available in the reference sections of many mainstream bookstores and the reference or reserve sections of the University at Albany Libraries.

4.6 Online Participation and Communication

Each student is expected to have an email account for this class. Blackboard messages (internal) is the best (and preferably the only) method for communicating with the instructor and TA concerning the course, assignments, questions, and readings. Each student must also subscribe to IST-L (http://www.albany.edu/information-science/assets/Listserv_instructions.pdf), the Information Studies listserv.

Students are required to use Blackboard to read course materials including assignments, submit assignments electronically, and contribute to online discussions. They are also expected to visit the course’s Blackboard site at least once every other day to respond to communications from the instructor, TA, or other students. For all assignment due dates, see the course's weekly calendar/schedule.

5. Student Performance Evaluation (Grading)

5.1 Grading

Grades are determined on a 10-point scale. An A signifies superior work beyond basic requirements of the course, B signifies adequate work that meets most requirements, and C or lower signifies inadequate work that does not meet the requirements.

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>95-100</td>
<td>90-94</td>
<td>86-89</td>
<td>83-85</td>
<td>79-82</td>
<td>75-78</td>
<td>71-74</td>
<td>68-70</td>
<td>60-67</td>
<td>0-59</td>
</tr>
</tbody>
</table>

The following shows the weights of the various assignments.

<table>
<thead>
<tr>
<th>Assignment/Project/Task</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Ice-Breaker&quot; Module &amp; Blackboard exercises</td>
<td>2%</td>
</tr>
<tr>
<td>Weekly statistics assignments (11 at 2% each)</td>
<td>22%</td>
</tr>
<tr>
<td>Final project (grant/research proposal)</td>
<td>25%</td>
</tr>
<tr>
<td>Quizzes (2 at 10% each)</td>
<td>20%</td>
</tr>
<tr>
<td>Final examination</td>
<td>20%</td>
</tr>
<tr>
<td>Discussion question/post &amp; review/comment</td>
<td>3%</td>
</tr>
<tr>
<td>Article summary + peer assessment</td>
<td>2%</td>
</tr>
<tr>
<td>Prospectus + peer assessment</td>
<td>3%</td>
</tr>
<tr>
<td>Draft proposal + peer assessment</td>
<td>3%</td>
</tr>
<tr>
<td>Extra credit for completing HSR core training <a href="https://www.citiprogram.org/">https://www.citiprogram.org/</a></td>
<td>3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Keep in mind that submitting assignments, projects, quizzes, and final exams on time and replying to communications via Blackboard in a timely fashion are factors in assigning grades/scores.

5.2 Grading criteria

**Deadlines:** To facilitate timely grading, all assignments must be submitted by 11:59PM on the due date. A point will be deducted for each day an assignment is late. An exception can be made if the student absolutely cannot meet the due date and notifies the instructor in advance. Without this notification and an extension by the instructor, any assignment submitted more than one full week (7 days) late will not be reviewed or graded. Students may also lose points for incomplete submissions and failure to follow instructions. If you do not understand the assignment and instructions, you should contact the instructor -- prior to assignment deadlines.

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1 Click on “Register” if you don’t have an account. Inside the “Search for organization” box, type “Albany” (without the quotation marks) and choose “SUNY - University at Albany” from the list.
Writing Expectations: One of the goals of the course is to help you learn the tools for effective research and writing at the graduate level. As such, your papers are expected to be well researched, well organized and well written. Quality academic writing carries the reader along in a logical progression, is well organized, is clear, adheres to the format prescribed by the assignment, does not use the first person (e.g. I or we), avoids colloquialisms, uses correct grammar/punctuation/spelling, and supports statements with cited references. A good general reference for research writing is available at: https://owl.english.purdue.edu/owl/. A useful free Open Source computer tool for helping organize your thoughts and topics is FreeMind. It is available at: http://sourceforge.net/projects/freemind/

Constructive Peer Assessments: Some of the assignments involve self and peer assessments. Completing the self and peer assessments is compulsory and the review/evaluation counts toward and will form part of the assignments’ grade. At the same time, peer assessments are also meant to help your fellow students. Therefore, your comments and feedbacks should be constructive and critical yet respectful (and positive) and should help them improve their assignment/project when revising it.

Substantive Post: A contribution to an online discussion through postings is substantive if it responds to the discussion question or another student’s post by critically reflecting on what is being discussed. Simply posting “I agree” in response to another student’s post would not be considered a substantive post.

Participation: In order to benefit from the course, each student needs a high level of participation in face-to-face & online discussions and activities. All students are expected to login to the course’s Blackboard site daily and reply to email within 24 hours. Exceptions are weekends and holidays unless an assignment is due.

5.3 Grade options
Extra credit: Human Subjects Research Course (online) - <https://www.citiprogram.org/>

All 608 students are required to sign up for the University of Miami’s online course on human subjects research (Social-Behavioral-Educational (SBE) track) and to read the first four (4) modules in order to answer the discussion question during Week 8 (10/16 – 10/22). The rest of the course is optional and will give you up to 3 extra credit points.

Extra credit option: In order to receive extra credit for this work, please take the modules required for University at Albany, and any other modules that look interesting to you. If you are in school media you will probably want to take modules that concern children as subjects of research.

After completing the human subjects research (Miami) course and taking the quizzes, save your certificate of completion as a PDF file and write up a one page, double-spaced evaluation that addresses the following points:

- you did the course
- the additional modules you covered
- what was most helpful
- what was least helpful
- your recommendation for having future students do this training
- ease of reading
- interest level of materials
- likelihood that the materials could more effectively be treated through class discussion
- importance to your understanding of materials covered in 608

You may turn in this work (the one page evaluation together with your certificate of completion) any time before the due date but it must be submitted via the appropriate assignment drop box. A link is available to a drop box in the Week 11 Module in Blackboard.

Withdrawal: Please see the University at Albany’s policy on withdrawal (http://www.albany.edu/graduatebulletin/requirements_degree.htm) and the semester schedule for due dates. Please note that a student who simply stops participating and does not file for withdrawal per University at Albany procedures may receive a grade of “E”.
Incomplete: No incompletes will be given in this class without the express permission of the instructor in advance of the end of the semester. Quizzes and examinations will only be given (and must be done) on the announced days. Students who do not attend class during Quiz #1 or #2 or the final examination will have their averages computed with a grade of 0. Students who do not turn in their final proposals on time should expect their grades will be averaged with a final proposal grade of 0. Late papers lose 5 points (for each day an assignment is late) at the discretion of the instructor.

A tentative grade of "I" is given only when the student has nearly completed the course but due to circumstances beyond the student’s control the work is not completed on schedule. The student is responsible for contacting the instructor to request an incomplete and discuss the work required for completing the course in advance of the end of the semester. The date for the completion of the work is specified by the instructor. The date stipulated will not be later than one month before the end of the session following that in which the Incomplete is received. The grade "I" is automatically changed to "E" unless work is completed as agreed between the student and the instructor.

6. Readings

Additional readings in Blackboard with numbers indicated under “Read for class” in the course schedule.

- BLS #1. Finding the Objects to Study
- BLS #2. Protection of Human Research Subjects and Other Ethical Issues
- BLS #3. Step Four: Asking Descriptive Questions
- BLS #4. Survey Research
- BLS #5. Writing the Research Proposal
- BLS #6. Qualitative Analysis of Content
- BLS #7. Writing the Research Report

Methodology Articles: This is a very small set of examples of research articles. Read these to get a sense of how researchers in information science report their results and use different methods to explore their research questions.


Connaway & Powell chapter key for second, third, fourth, and fifth editions

<table>
<thead>
<tr>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
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<td>9</td>
<td>10</td>
<td>11</td>
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</tr>
</tbody>
</table>

Research and librarianship
Developing the research study
Selecting the research method
Survey research and sampling
Data collection techniques
Experimental research
Qualitative research
Historical research
Analysis of data
Writing the research proposal (in Blackboard)
Writing the research report

The 608 syllabus uses Connaway & Powell’s 5th edition numbers. Use the chart above depending upon which edition you own. Read “Qualitative research” particularly if your final proposal for 608 is based on analyzing text or qualitative variables rather than numbers or quantitative variables.
7. Course Policies

7.1 Class Attendance

This is an intensive class in statistics and research methods. Attendance is taken each week (when class meets face-to-face). Students are expected to login to the course’s Blackboard site at least once every day and to reply to email within 24 hours. You are asked to **notify the instructor in advance** if you cannot attend class, must arrive late or leave early, and expect to submit work late or intend to withdraw from the course. This course depends heavily upon student participation and you need to explore the course materials (especially the online videos and Web resources) in Blackboard to get full benefit from the course.

7.2 Class conduct

**Availability:** The instructor and TA are available for student consultation during office hours, by appointment, and online in Blackboard. Students are expected to check Blackboard messages (internal) at least once every day to see whether the instructor or TA is trying to reach them. Students should not assume that instructors and TAs are online 24 hours a day, 7 days a week, to answer your questions immediately (even though we will try to do so as much as possible).

**Courtesy:** In class discussions and group assignments, both face-to-face and online, the instructor, TA, and students are expected to demonstrate professional behavior. This means cooperating and interacting in a courteous, supportive, and tactful manner based on mutual respect for each other’s ideas.

7.3 Plagiarism and Academic Dishonesty/Misconduct

Due to the intensive nature of this course, students are encouraged to form study groups and to work together on assignments. Learn by interacting with one another—support and help one another. However, quizzes and the final examination will clearly be expected to reflect individual effort—you are expected to neither give nor receive assistance from anyone.

The instructor of this course has a zero tolerance policy for academic dishonesty, plagiarism (http://library.albany.edu/usered/plagiarism/), and cheating. As a policy for this course, plagiarism, self-plagiarism or cheating will result in a failing grade for the course. In addition, the instructor will pursue further disciplinary action at the University level including reporting to the Office of Conflict Resolution & Civic Responsibility (http://www.albany.edu/judicial_affairs/) according to the policies set forth in the current University at Albany Undergraduate Bulletin or University at Albany Graduate Bulletin, whichever is applicable to the student. The instructor abides by and enforces all relevant University at Albany policies.

Academic misconduct includes cheating, plagiarism and other unethical and illegal activities. Students are encouraged to form study groups and to talk about and read each other’s assignments. Learn by interacting with one another—support and help one another. Nonetheless, students are expected to give credit where credit is due by citing the work and ideas of others in papers that they write. If you are not sure about what constitutes academic dishonesty, ask the instructor or err on the side of citing more than you think necessary.

The Department of Information Science takes academic dishonesty very seriously. Before taking classes within the Department of Information Science, you should familiarize yourself with the Department’s academic dishonesty policy, available in both the Department’s graduate handbook and online at http://www.albany.edu/content_images/Academic_Dishonesty.pdf. Professors reserve the right to add to the Department’s policy as they see appropriate.

7.4 Students with disabilities

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (BA 120; Phone: (518) 442-5490; http://www.albany.edu/disability/index.shtml).
# 8. Course Schedule as of 8/7/2017 (subject to revision) **

**Weekly Course Schedule:** Submit the article summary, prospectus, draft and final proposals as word-processed files in Blackboard before 11:59PM (Eastern Standard Time) on the due dates. This schedule will be updated regularly. Please check back for any updates or changes. Ignorance of the due dates for submitting assignments in this class is not an excuse for failing to satisfy or complete them.

<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Topics</th>
<th>Read for Class</th>
<th>Assignment/Quiz/Exam Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/28 – 9/3</td>
<td>Center and Spread; Introductions; Syllabus; Course information; Blackboard</td>
<td>B&amp;B: Preface, Chapters 1, 2; Course syllabus; Student profiles/introductions; Blackboard exercises</td>
<td>Complete “Ice-Breaker” Module; W.S.A*</td>
</tr>
<tr>
<td>2</td>
<td>9/4 – 9/10</td>
<td>Center and Spread again; Grant Proposals</td>
<td>B&amp;B: Chapters 2, 3; C&amp;P, Chapters 1, 10—BLS #1, #5</td>
<td>Article summary + peer assessment; W.S.A*</td>
</tr>
<tr>
<td>3</td>
<td>9/11 – 9/17</td>
<td>Probability; Research Studies</td>
<td>B&amp;B: Chapter 4; C&amp;P, Chapters 2, 3</td>
<td>Quiz #1; W.S.A*</td>
</tr>
<tr>
<td>4</td>
<td>9/18 – 9/24</td>
<td>No Class—Rosh Hashanah</td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>9/25 – 10/1</td>
<td>Probability again; Surveys</td>
<td>B&amp;B: Chapter 4; C&amp;P: Chapters 4, 5; BLS #1, #4</td>
<td>Prospectus + peer assessment; W.S.A*</td>
</tr>
<tr>
<td>6</td>
<td>10/2 – 10/8</td>
<td>Normal Distributions; Data Collection</td>
<td>B&amp;B: Chapter 6; C&amp;P: Chapter 5</td>
<td>W.S.A*</td>
</tr>
<tr>
<td>7</td>
<td>10/9 – 10/15</td>
<td>Normal Distributions again; Experiments</td>
<td>B&amp;B: Chapter 6; Practice area under a normal curve; C&amp;P: Chapter 6</td>
<td>W.S.A*</td>
</tr>
<tr>
<td>8</td>
<td>10/16 – 10/22</td>
<td>Ethics, human subjects research and institutional review</td>
<td>BLS #2; discussion of HSR/Miami course first 4 modules required</td>
<td>Quiz #2; Discussion post + review/comment</td>
</tr>
<tr>
<td>9</td>
<td>10/23 – 10/29</td>
<td>No Class – Work on draft proposal</td>
<td></td>
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<tr>
<td>10</td>
<td>10/30 – 11/5</td>
<td>Sampling Distributions; Historical Research</td>
<td>B&amp;B: Chapter 7; C&amp;P: Chapters 7, 8; BLS #3</td>
<td>Draft proposal + peer assessment; W.S.A*</td>
</tr>
<tr>
<td>11</td>
<td>11/6 – 11/12</td>
<td>Estimation; Analysis of Data</td>
<td>B&amp;B: Chapter 8; C&amp;P: Chapter 9; BLS #6</td>
<td>HSR extra credit due; W.S.A*</td>
</tr>
<tr>
<td>12</td>
<td>11/13 – 11/19</td>
<td>Hypothesis testing; Proposals</td>
<td>B&amp;B: Chapter 9; C&amp;P: Chapter 10—BLS #5</td>
<td>W.S.A*</td>
</tr>
<tr>
<td>13</td>
<td>11/20 – 11/26</td>
<td>No Class – Thanksgiving week</td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>11/27 – 12/3</td>
<td>Correlation/Regression; Research reports</td>
<td>B&amp;B: Chapter 10; C&amp;P: Chapter 11; BLS #7</td>
<td>W.S.A*</td>
</tr>
<tr>
<td>15</td>
<td>12/4 – 12/10</td>
<td>Chi square; wrap up</td>
<td>B&amp;B: Chapter 11 (selected)</td>
<td>Final proposal due; W.S.A*</td>
</tr>
<tr>
<td>16</td>
<td>12/11 – 12/17</td>
<td>Final Examination</td>
<td>B&amp;B: Chapters 7-11</td>
<td>Final Examination</td>
</tr>
</tbody>
</table>

*Weekly Statistics Assignment (in Blackboard). **For a detailed weekly course calendar and due dates, please visit the course’s Blackboard site.