# Course Description

An in-depth examination of research and measurement, analysis of experimental data, and qualitative designs. Implications of mixed method research are considered.

# University Learning Outcomes (ULO)

* **ULO1:** Knowledge of Human Cultures and the Physical and Natural World
* **ULO2:** Intellectual and Practical Skills
* **ULO3:** Personal and Social Responsibility
* **ULO4:** Integrative and Applied Learning
* **ULO5:** Immersed in the Critical Concerns of the Sisters of Mercy of the Americas

# Program Learning Outcomes (PLO)

* **PLO1:** Articulate an educational organization's mission, goals, and guiding principles that distinguish the organization from others. (ULO1, 4)
* **PLO2:** Understand the foundational base of organizational theory, and demonstrate the ability to bridge theory and practice. (ULO1, 2, 4)
* **PLO3:** Given scenarios of conflict, choose ethical courses of action consistent with Gospel values. (ULO3, 5)
* **PLO4:** Synthesize and analyze data to reveal relations and causality, and convert raw data into actionable information. (ULO2, 4)
* **PLO5:** View problems and challenges through the lens of a scientist, seeking evidence-based conclusions. (ULO1, 2, 4)
* **PLO6:** Practice and model steward leadership in transforming organizations to better serve all constituents. (ULO3, 4, 5)
* **PLO7:** Demonstrate facility in the application of technology to solve problems, analyze and synthesize data, and manage information. (ULO1, 2, 4)

# Course Learning Outcomes (CLO)

* **CLO1**: Utilize sampling methodology to generalize from findings.
* **CLO2**: Design research instruments that capture information in a valid and reliable way.
* **CLO3**: Differentiate between the types of experimental and non-experimental research designs.
* **CLO4**: Discern whether a research design allows for causal inference.
* **CLO5**: Apply descriptive statistical tools to generate summary data.
* **CLO6**: Apply inferential statistical tools to test for correlation.

# Student Expectations

Students are expected to:

* Ask probing and insightful questions related to course content.
* Make meaningful and relevant connections and application to their own learning process.
* Be productive and contributing members of class discussions.

# Required Course Materials

Trochim, W. M. (2003). Research methods knowledge base. Cincinnati, OH: Atomic Dog Pub.

ISBN: 1592602916

**Note:** This text is out of print but available for free online at the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php).

# Suggested Point Values

|  |  |  |
| --- | --- | --- |
| **Assessment** | **Point Value** | **Due** |
| **Week 1** |  |  |
| Week 1 Quiz | 5 |  |
| **Week 2** |  |  |
| Team Research Project: Research Idea—Question, Population, Hypotheses, and Sampling Methodology | 150 |  |
| Week 2 Quiz | 10 |  |
| **Week 3** |  |  |
| Team Research Project: Questionnaire | 150 |  |
| Week 3 Quiz | 15 |  |
| **Week 4** |  |  |
| Team Research Project: Faux Data Excel File | 50 |  |
| Week 4 Quiz | 15 |  |
| **Week 5** |  |  |
| Team Research Project: Frequency, Percentages, and Individual Mean | 150 |  |
| Week 5 Quiz | 5 |  |
| **Week 6** |  |  |
| Team Research Project: Group Mean and Standard Deviation | 150 |  |
| **Week 7** |  |  |
| Team Research Project: Final Presentation | 300 |  |
| **Total Points** | **1000** |  |

**Grading Scale – Use Total Points divided by 10 to compute students’ grades**

|  |  |
| --- | --- |
| **Grade** | **Range** |
| A | 93-100 |
| A- | 90-92 |
| B+ | 87-89 |
| B | 83-86 |
| B- | 82-80 |
| C+ | 77-79 |
| C | 73-76 |
| C- | 70-72 |
| D+ | 67-69 |
| D | 63-66 |
| D- | 60-62 |
| F | 59 |

# Course Schedule

|  |  |  |
| --- | --- | --- |
| **Week** | **Start** | **End** |
| One | <insert start date> | <insert end date> |
| Two |  |  |
| Three |  |  |
| Four |  |  |
| Five |  |  |
| Six |  |  |
| Seven |  |  |

# Weekly Learning Modules

|  |  |  |  |
| --- | --- | --- | --- |
| **Week One: Foundations and Sampling** | | | |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Write a conceptual research question. | | CLO1 | |
| * 1. Write a null and an alternative hypothesis. | | CLO1 | |
| * 1. Explain the link between sampling and external validity. | | CLO1 | |
| * 1. Create a sampling method with strong external validity. | | CLO1 | |
| * 1. Define sampling terms. | | CLO1 | |
| * 1. Solve statistical problems in statistical design. | | CLO1 | |
| * 1. Estimate the population mean from the sample mean. | | CLO1 | |
| * 1. Differentiate between probability and non-probability sampling. | | CLO1 | |
| ***Introduction to EDU 807****: An overview of the course theme and Team Research Project.* | | ***Alignment*** | ***AIE*** |
| **Modern Romance and Statistics: Two Phrases You Didn’t Think Would Ever Go Together**  In this course, you will examine concepts and issues involved with research, including measurement, data, analysis, and designing research. While it might sound as if this topic is very dry, you will find that the science of research helps you to frame questions and answer them using powerful tools and instruments.  **Read** [Everything You Thought You Knew About L-O-V-E is Wrong](http://time.com/aziz-ansari-modern-romance/), available on the Time Magazine website. In this article, comedian Aziz Ansari demonstrates how data and statistics can help us to address and answer questions we have about the world around us. Notice how rigorous a process Ansari applies to a topic as potentially sticky as romance. Look at the power of a sound measurement tool and the development of sound measurement tools. In particular, notice how Ansari chooses to measure data. Think critically about these questions as you complete the reading:   * Did he capture the relevant data that could answer his initial questions? * How did Ansari do his sampling? * What was his population and sample? * Think about external validity. To whom could he generalize his findings? * Was the data well-constructed? * Are there alternative methods of capturing the data that he did?”   Additionally, you may read more of the book by downloading the [sample from iTunes](https://itunes.apple.com/us/book/modern-romance/id934569203?mt=11&ls=1) (**click** *View in iBooks*, then **click** *Sample*). While you read pp. 1-34, note the following sections:   * Research methods pp. 15-19 * Interviews pp. 21-24 * See pp. 24-26 for examples of a research method called records analysis. | | 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8 | NA |
| **Team Research Project: Overview**  This course includes a Team Research Project culminating in a presentation due Week Seven. Your team will submit the following graded assignments which are intended to build into the final presentation:   * Research Idea: Question, Population, Hypothesis, and Sampling Methodology (due Week Two) * Questionnaire (due Week Three) * Faux Data Excel File (due Week Four) * Frequency, Percentages, and Individual Mean (due Week Five) * Group Mean and Standard Deviation (due Week Six) * Final Presentation (due Week Seven)   Your instructor will provide feedback on these assignments. This is a normal part of how research develops—incrementally. Very few people get it right the first time, so don’t worry if you receive constructive feedback and suggestions for revision—this will help you to learn to write in a scholarly context, fine-tune your research design, and refine the content for your final presentation.  Team Collaboration   * Your instructor will assign research teams. If you prefer to work on your own, please contact your instructor before Week One is over.      * You will collaborate with your team each week to brainstorm ideas, refine your research design, and prepare your final presentation. This is your chance to show your understanding of the material for each week and to work on research in a way that resembles the way research is done professionally. * A collaboration space has been created for your team (click the *Team Collaboration* course menu button in the left-hand navigation pane of your course page), and you are encouraged to communicate with your team members using the tools provided therein. You may use an alternate method of communication (e.g. phone, FaceTime, Google Hangouts) if this is more convenient for your team members.   Next Steps   * Contact your instructor if you do not have a team or cannot access your Team Collaboration space. * Complete the *Team Research Project: Getting Started* activity by Sunday of this week. | | Course | NA |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**    **Read** the following sections from the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php). You can access each section in the outline via the left-hand navigation pane. For this reading assignment and throughout the course, it is important to click on and read ALL the material on live links embedded in the assigned reading material.   * Navigation * Foundations * Sampling   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 | Discuss readings = **1 hour** |
| **Week One Lecture**  In this lecture, you will be learning about sampling and how sampling can assist you in determining external validity.  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Chapter 2](http://www.screencast.com/t/RO1oQrka6f) [26:51] | | 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 | Lecture: Review lecture materials and post response =  **1 hour** |
| **Team Research Project: Getting Started**  After reading the Aziz Ansari article, you know rigorous online research and data analysis can be conducted on a topic as sticky as modern romance. For this Team Research Project, we’ll use modern romance—specifically, people’s attitudes toward online dating—as a research topic. This approach provides an interesting way for us to apply what we’re learning about research design to a common topic we can all discuss.  **Navigate** to your team’s collaboration space (click the *Team Collaboration* course menu button in the left-hand navigation pane of your course page) and click on the *Blog* tool.  **Create** a single blog post by Sunday 11:59PM (EST). **Note:** This activity is NOT GRADED and is simply a warm-up to get you talking with team members about your research project ideas. The formal proposal is not due until the end of Week Two. Your blog post should address the following:   1. **Brief Bio:** Include your name, where you are teaching, and what grade level or specialty you teach. (If you are not currently teaching, what grade level or specialty would you like to teach?) 2. **Research Proposal to Your Team:** What specific topic (related to people’s attitudes about online dating) would you like to research with your team? Write a 250- to 400-word proposal to your teammates on a specific research question you are interested in investigating. Address as many of the following as possible:  * What is your proposed research question and population of interest? In other words, what two groups of people would you like to compare in terms of attitudes towards online dating? For example: “Do shy people or outgoing people have more positive attitudes towards online dating?” * Write a null hypothesis. * Write an alternative hypothesis. * Describe a possible sampling methodology: Hypothetically, how would you obtain a sampling frame? (The sampling frame is a list of the people in the population.) What process would you use to select names from the list? How many people would you recruit? (The recommended number is 30.) * What process could you use to collect data? For example, would you use SurveyMonkey or some other electronic data collection service? Or would you use a paper and pencil method of data collection? * Explain whether your sampling methods would lead to strong or weak external validity. (Remember, external validity is your ability to generalize your findings to a larger population.) * Include at least 5 appropriate references that address this research topic.   To aid in completing your proposal, review these Hints for Choosing a Topic and Composing a Research Question.  **Next Step:** Begin collaborating according to the *Team Research Project*: *Discuss Your Research Ideas* instructions below. | | 1.1, 1.2, 1.3, 1.4, 1.5 | Team Project = **1 hour** |
| **Team Research Project: Discuss Your Research Ideas**  In the *Team Research Project: Getting Started* activity, you introduced yourself, proposed your own idea for research, and began collaboratively discussing which research idea your team might pursue. The next step is to collaboratively choose a single research idea, including your specific research question, the population to be studied, a hypothesis, and a potential sampling methodology.  **Discuss** with your teammates which research idea you would like to pursue for this team project. You may continue to use the *Team Collaboration* space in Blackboard or you may use an alternate method of communication (e.g. phone, FaceTime, Google Hangouts).  Remember, the basic question for your team is: What two groups would you find interesting to compare in terms of their attitudes towards online dating? Here are a few prompts to get you thinking. You may choose one of these, but are not limited to these ideas:   * What kind of people are more likely to have positive attitudes toward online dating: Shy people or outgoing people? * Do trusting people have more positive attitudes toward online dating than non-trusting people? * Do women or men experience more reluctance to share personal information in online dating? * Are first time daters or dating veterans more likely to participate in online dating? * Who is more accepting of online dating: Individuals under 24 or individuals older than 24?   Notice that each question identifies: (1) the two groups that are to be compared and (2) what specific attitude towards online dating will be investigated. Keep this in mind as you brainstorm topic ideas.  **Next Step:** Prepare to submit your team’s research idea according to the instructions provided in the *Team Research Project:* *Research Idea—Question, Population, Hypothesis, and Sampling Methodology* assignment, located in Week Two. | | 1.1, 1.2, 1.3, 1.6 | Team Project = **2 hours** |
| ***Supplemental Resources and Activities***  *Explore these optional resources to deepen your understanding.* | | ***Alignment*** | ***AIE*** |
| **Additional Resources: Hypothesis Testing and Null Hypothesis**  **Read** the following articles about hypothesis testing and the null hypothesis, available from Penn State College of Science website:   * [3.0 – Hypothesis Testing](https://onlinecourses.science.psu.edu/statprogram/node/136) * [3.1 – Hypothesis Testing (critical value approach)](https://onlinecourses.science.psu.edu/statprogram/node/137) * [3.2 – Hypothesis Testing (P-value approach)](https://onlinecourses.science.psu.edu/statprogram/node/138) * [3.3 – Hypothesis Testing: Examples](https://onlinecourses.science.psu.edu/statprogram/node/139)   **Review** the following resources:   * [Null Hypothesis](http://psc.dss.ucdavis.edu/sommerb/sommerdemo/stat_inf/null.htm) * [Statistics 101: Null and Alternative Hypotheses - Part 1](https://www.youtube.com/watch?v=cpL38ZeIecE) * [Stats - What Does "Fail to Reject the Null Hypothesis" Mean, And Why Do We Say it That Way?](https://www.youtube.com/watch?v=jEZIhVhmtPU)   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 | Discuss readings = **1 hour** |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Week 1 Quiz**  **Complete** the Week 1 Quiz by Sunday 11:59PM (EST). This quiz covers this week’s readings and video tutorials, is open book and can only be taken once (no retakes). Make sure you are prepared to complete the quiz before you attempt it. | | 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 | Quiz and feedback =  **1 hour** |
| **Total** |  |  | **7 hours** |

# Faculty Notes

**Adobe Connect:** Consider posting an announcement asking students to submit any questions or topics they'd like addressed ahead of time. The instructor can then utilize those questions that come up in the first part of the week to tailor the live Adobe Connect class session that would be scheduled toward the later part of the week. That 1-hour synchronous session will allow students the opportunity to go over any questions they had with the homework and clarify any misconceptions they have about the course content. All Adobe Connect sessions should be recorded and a link to the recording be posted to the course page so any student who misses the session can review it later in the week.

*Note:* It is the instructor’s choice as to what day they will schedule the Adobe Connect Live Session, but it is recommended that they schedule this session for Wednesday of the week so students have plenty of time to review their homework prior to the deadline on Sunday.

**Team Assignments for the Team Research Project**

Instructors should create the groupings for students once the course roster has been finalized. You may wish to solicit from students their preferences on who should or should not be on their team. Make it clear that while you appreciate and welcome input, that you have the final word on groupings. If a group becomes non-functional, or if a student expresses a preference, this assignment may be completed by individual students with a slightly reduced scope.

**Review** the following tutorial in order to create student groupings in Blackboard:

* [Blackboard Groups](https://cloud.ensemblevideo.com/Watch/r8ZMc43K)
* [Editing and Managing Groups](https://blackboardhelp.usc.edu/working-with-groups/editing-and-managing-groups/)

**Post** the following announcement to inform students of their team assignments:

|  |
| --- |
| **Announcement**  Hello everyone!  In this course, you’ll be working on a Team Research Project. Within your team, you’ll be contributing materials, knowledge, and work to the collaborative completion of a research project. You are expected to individually contribute ideas, feedback, and conversation each week, in addition to work done to support the completion of the actual project.  I’m pleased to announce the teams for this project are:   * Team A: [enter student names] * Team B: [enter student names] * Team C: [enter student names] * Team D: [enter student names]   If you have any questions about your team assignments, you can reach me at XXXXXX. |

**Weekly Readings and Lectures**

The materials in this course can be intimidating for students. Although there is plenty of scaffolding built into this course, you should monitor student comprehension through the General Q&A discussion forum and Group Collaboration space. Encourage students to ask questions there before submitting an email so others can benefit from the additional outreach.

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| Week Two: Measurement | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Define construct validity of instruments (e.g., face, content, criterion, and factor validity). | | CLO2 | |
| * 1. Define variables, attributes, and codes. | | CLO2 | |
| * 1. Explain true score theory and the theory of reliability. | | CLO2 | |
| * 1. Identify the types of reliability. | | CLO2 | |
| * 1. Explain the appropriate statistical test for each of the 4 levels of measurement. | | CLO2 | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**    **Read** the following sections from the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php):   * Measurement   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 | Discuss readings = **1 hour** |
| **Week Two Lectures**  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Research Methods 3.1](http://www.screencast.com/t/ljWqD7jc3) [31:32] * [Research Methods 3.2](http://www.screencast.com/t/O48VlaGNHr5) [19:16]   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 | Lecture: Review lecture materials and post response =  **1 hour** |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Team Research Project: Research Idea—Question, Population, Hypothesis, and Sampling Methodology**  During the past two weeks, you collaborated with your team to discuss research ideas, refine your collective thinking, and (hopefully) decide on a research idea to pursue for this project. Now it’s time to present that idea to your instructor.  **Select** one member of your team to submit a description of your research idea. Your description should adhere to the following guidelines:   * Overall length should be about 350 words in length. * State your specific research question. It must identify the two groups you would like to compare (e.g. Men/Women) in terms of a specific attitude towards online dating (e.g. willingness post a profile picture). * Explain why you chose this research question and why it’s a good topic. You may want to review Hints for Choosing a Topic and Composing a Research Question. * Identify your team’s null and alternative hypothesis. * Describe the population and the sampling method you would use. * If possible, give each other scholarly attribution. For example, if one of your teammates made an especially clever or interesting contribution to you collective thinking about this project, you may note their name within parentheses.   **Submit** your description in a single Word document by Sunday 11:59PM (EST).  **Next Step:** Begin working on the *Team Research Project: Questionnaire* assignment, located in Week Three. | |  | Team Project = **3 hours** |
| **Week 2 Quiz**  **Complete** the Week 2 Quiz by Sunday 11:59PM (EST). This quiz covers this week’s readings and video tutorials, is open book and can only be taken once (no retakes). Make sure you are prepared to complete the quiz before you attempt it. | | 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 | Quiz and feedback =  **1 hour** |
| **Total** |  |  | **6 hours** |

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| --- | --- | --- | --- |
| Week Three: Design: Description, Correlation, and Causality | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Evaluate internal validity of various research designs. | | CLO3, CLO4 | |
| * 1. Use design notation to diagram various research designs. | | CLO3, CLO4 | |
| * 1. Identify the 3 conditions necessary for causal inference. | | CLO3, CLO4 | |
| * 1. Identify threats to internal validity for various design types. | | CLO3, CLO4 | |
| * 1. Differentiate between the purposes of qualitative and quantitative designs. | | CLO3, CLO4 | |
| * 1. Define evaluation criteria for qualitative designs. | | CLO3, CLO4 | |
| * 1. Conduct content analysis of qualitative data. | | CLO3, CLO4 | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**    **Read** the following sections of from the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php):   * Internal Validity * Introduction to Design * Types of Design * Experimental Design   **Read** “[Why Loving Your Great, Brilliant Idea Is No Good](https://rightangleresearch.wordpress.com/2017/10/07/why-we-absolutely-must-talk-about-causes/).”  Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 | Discuss readings = **0.5 hours** |
| **Week Three Lectures**  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Chapter 7.1: Research Designs and Causal Inference](http://www.screencast.com/t/w1KsDNFAfKC) [14:16] * [Chapter 7.2: Threats to Internal Validity](http://www.screencast.com/t/H4CMirXaLT) [36:42] * [Chapter 8: Qualitative and Mixed Methods Designs](http://www.screencast.com/t/uPXtfji4) [17:26] * [Chapter 9: Experimental Design](http://www.screencast.com/t/ewKVOP7NZ8C) [16:11]   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 | Lecture: Review lecture materials and post response =  **1 hour, 30 minutes** |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Team Research Project: Questionnaire**  During Weeks One and Two, your team settled on your research idea. You now have a research question that identifies the two groups of people you would like to compare in terms of a specific attitude towards online dating. Your task for this week is to create a Likert-scale questionnaire that allows you to measure this.    **NOTE:** We will not collect data because it requires prior approval from the Institutional Review Board (IRB). This means you MAY NOT distribute your questionnaire. To do so would violate IRB and Gwynedd Mercy University policies. Rather, in Week Four, you will create Faux Data as if 30 respondents had answers your questionnaire.  **Create** an 11-question Likert-Scale questionnaire that includes the following:   * **Categorical question:** Include one categorical question that allows you to identify which group the participant belongs to (e.g. male/female, under/over 24 years old, is shy/outgoing, etc.). This should be your first question. * **Attitudinal questions:** Include 10 attitudinal questions that help you measure a specific attitude related to online dating.   **Write** a 300- to 450-word description of your questionnaire, including:   * a short summary of what you would like your questionnaire to achieve * a description of how you have ensured that this instrument will be accurate and reliable * a brief description of the process your team used to create this questionnaire   **Select** one member of your team to **submit** your Questionnaire and the description by Sunday 11:59PM (EST).  **Next Step:** Begin working on the *Team Research Project: Faux Data Excel File* assignment, located in Week Four. | | 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 | Team Project = **3 hours** |
| **Week 3 Quiz**  **Complete** the Week 3 Quiz by Sunday 11:59PM (EST). This quiz covers this week’s readings and videos, is open book and can only be taken once (no retakes). Make sure you are prepared to complete the quiz before you attempt it. | | 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 | Quiz and feedback =  **1 hour** |
| **Total** |  |  | **6 hours** |

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| Week Four: Analysis and Reporting | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Create tables of frequency distributions. | | CLO5 | |
| * 1. Create graphic displays of frequency distributions. | | CLO5 | |
| * 1. Differentiate between proportions and percents. | | CLO5 | |
| * 1. Interpret a normal distribution. | | CLO5 | |
| * 1. Compute mean, median, and mode. | | CLO5 | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**    **Read** the following sections of from the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php):   * Analysis, including these subsections * **Conclusion Validity** * **Data Preparation** * **Descriptive Statistics**   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 4.1, 4.2, 4.3, 4.4, 4.5 | Discuss readings = **0.5 hours** |
| **Week Four Lectures**  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Chapter 12: Analysis: Tabular Methods](http://www.screencast.com/t/zKpy4FRsiIds) [10:55] * [Chapter 12: Analysis: Graphic Displays](http://www.screencast.com/t/vqz4wrADrn) [7:15] * [Central Tendency](http://www.screencast.com/t/0YWq7ycywvP2) [17:34]   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 4.1, 4.2, 4.3, 4.4, 4.5 | Lecture: Review lecture materials and post response =  **1 hour** |
| ***Supplemental Resources and Activities***  *Explore these optional resources to deepen your understanding.* | | ***Alignment*** | ***AIE*** |
| **Survey Monkey Tutorial**    As part of your research project, you may decide to create your instrument using online resources. Survey Monkey is a website that allows you to create surveys and distribute them via email for free. The tutorials below will help you become acquainted with the SurveyMonkey interface and process.  **Navigate** to [www.surveymonkey.com](http://www.surveymonkey.comT) to familiarize yourself with this online tool.  **Watch** the [SurveyMonkey Tutorial](https://vimeo.com/107062720). | |  | NA |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Team Research Project: Faux Data Excel File**  Last week, you created a questionnaire to measure your research population’s attitudes towards online dating. Remember, do not distribute the questionnaire or collect data because it requires prior approval from the IRB. However, we are free to create hypothetical responses—It’s time to make up some data!  **Download** the *Faux Data Example*, located on Blackboard. This example file includes detailed, step-by-step instructions on how to set up and enter data into your team’s own Faux Data Excel file. Discuss this example with your teammates to make sure you understand the design and steps.  **Create** your team’s own Faux Data Excel file using the example as a guide. Remember, you’re making up data as if you had already distributed your questionnaire to 30 hypothetical participants who have responded, and you’re now importing responses from those 30 completed questionnaires into Excel.  **Select** one member of your team to **submit** your team’s Faux Data Excel file by Sunday 11:59PM (EST).  **Next Step:** Begin working on the *Team Research Project: Frequency, Percentages, and Individual Mean* assignment, located in Week Five. | | 4.1, 4.2, 4.3, 4.4, 4.5 | Team Project = **3 hours** |
| **Week 4 Quiz**  **Complete** the Week 4 Quiz by Sunday 11:59PM (EST). This quiz covers this week’s readings and video tutorials, is open book, and can only be taken once (no retakes). Make sure you are prepared to complete the quiz before you attempt it. | | 4.1, 4.2, 4.3, 4.4, 4.5 | Quiz and feedback =  **1 hour** |
| **Total** |  |  | **5.5 hours** |

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| Week Five: Analysis and Reporting | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Compute the range of a set of scores. | | CLO5 | |
| * 1. Compute a subject’s deviation score. | | CLO5 | |
| * 1. Compute the variance of a set of scores. | | CLO5 | |
| * 1. Compute the standard deviation (SD) of a set of scores. | | CLO5 | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**  **Read** the following sections of from the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php):   * Analysis, including these subsections * **Descriptive Statistics**   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 5.1, 5.2, 5.3, 5.4 | Discuss readings = **0.5 hours** |
| **Week Five Lectures**  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Dispersion/Range](http://www.screencast.com/t/ojC4rzxSo) [6:14] * [Dispersion/Standard Deviation](http://www.screencast.com/t/oqvvwlvkXR) [18:47]   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 5.1, 5.2, 5.3, 5.4 | Lecture: Review lecture materials and post response =  **1 hour** |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Team Research Project: Frequency, Percentages, and Individual Mean**  Last week, your team created its Faux Data Excel file and entered data for 30 hypothetical questionnaire respondents. This week, you’ll begin to analyze that data by performing some basic calculations.  **Add** frequency, percentages, and individual mean calculations to your team’s Faux Data Excel file. Use the *Frequency, Percentages, and Individual Mean Example* file, located on Blackboard, as a guide. This file shows you how to perform the necessary calculations using some basic Excel functions.  **Select** one member of your team to **submit** your team’s revised Faux Data Excel file by Sunday 11:59PM (EST).  **Next Step:** Begin working on the *Team Research Project: Group Mean and Standard Deviation* assignment, located in Week Six. | | 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 | Discussion: one post and replies to three other posts = **1.5 houra** |
| **Week 5 Quiz**  **Complete** the Week 5 Quiz by Sunday 11:59PM (EST). This quiz covers this week’s readings, is open book, and can only be taken once (no retakes). Make sure you are prepared to complete the quiz before you attempt it. | | 5.1, 5.2, 5.3, 5.4 | Quiz and feedback =  **1 hour** |
| **Total** |  |  | **4 hours** |

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| Week Six: Analysis and Reporting | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Identify independent, predictor, dependent, and outcome variables. | | CLO6 | |
| * 1. Compute the equation for a line. | | CLO6 | |
| * 1. Compute the residual for an individual in a sample. | | CLO6 | |
| * 1. Find a regression line that minimizes residuals. | | CLO6 | |
| * 1. Use the regression constants to predict an individual’s score. | | CLO6 | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**  **Read** the following sections of from the [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php):   * **Analysis Section** * **Inferential Statistics** * **T-test** * **Dummy Variables** * **General Linear Model** * **Post-test only analysis**   **Focus on General Linear Model (regression) for quiz.**  Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 | Discuss readings = **1 hour** |
| **Week Six Lectures**  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Regression Line, Part 1](http://www.screencast.com/t/diPnwdJEE) [12:59] * [Regression Line, Part 2](http://www.screencast.com/t/5xJqCGYoeo) [13:32]   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 | Lecture: Review lecture materials and post response =  **1 hour** |
| **Interactive Regression**  **Review** [this interactive regression analysis applet](http://www.shodor.org/interactivate/activities/Regression/). This will give you a better idea of how we can create lines and equations to fit the data plots you have collected. I would like you to play with this applet. Try entering 10 data points and clicking the ***Display line of best fit*** button to show how statistical regression can be used to fit a line to the data.  Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 6.4, 6.5 | Discuss readings = **0.5 hours** |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Team Research Project: Group Mean and Standard Deviation**  Last week, you added frequency, percentages, and individual mean calculations to your team’s Faux Data Excel file. This week we’ll continue the analysis with group mean and standard deviation calculations.  **Add** the group mean and standard deviation calculations to your team’s Faux Data Excel file. Use the *Group Mean and Standard Deviation Example* file, located on Blackboard, as a guide. This file shows you how to perform the necessary calculations using some basic Excel functions.  **Select** one member of your team to **submit** your team’s revised Faux Data Excel file by Sunday 11:59PM (EST).  **Next Step:** Begin working on the *Team Research Project: Final Presentation* assignment, located in Week Seven. | | 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6 | Discussion: one post and replies to three other posts = **2 hours** |
| **Total** |  |  | **4.5 hours** |

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| Week Seven: Analysis and Reporting | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Identify notation and terminology for a sample and for a population. | | CLO6 | |
| * 1. Compute a confidence interval for a population mean test score. | | CLO6 | |
| * 1. Compute the common variance of a set of test scores for two groups. | | CLO6 | |
| * 1. Compute the standard error of a test for a sample. | | CLO6 | |
| * 1. Compute a *t* statistic comparing mean scores for two groups. | | CLO6 | |
| * 1. Demonstrate how to use degrees of freedom to assess significance of a *t* statistic. | | CLO6 | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | | ***Alignment*** | ***AIE*** |
| **Reading: Research Methods Knowledge Base**  **Read** the [T Test](http://www.socialresearchmethods.net/kb/stat_t.php)section from [Web Center for Social Research Methods](http://www.socialresearchmethods.net/kb/index.php).  Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7 | Discuss readings = **0.5 hours** |
| **Lectures: Chapter 14**  **View** the following lectures which overview readings from *Research Methods Knowledge Base* (some slides in these videos were reproduced with permission from Dr. William Trochim):   * [Confidence Intervals](http://www.screencast.com/t/gqw097L1Hs2) [20:41] * [T Test](http://www.screencast.com/t/mTwMEYfG7x) [24:28]   Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 7.2, 7.5 | Lecture: Review lecture materials and post response =  **1 hour** |
| **Resource: Critical Values for the *t* Distribution**  **Use** this [critical values (percentiles) for the t distribution table](http://faculty.washington.edu/heagerty/Books/Biostatistics/TABLES/t-Tables/) to find critical values of t, using the column with the heading two-sided alpha, .05. | | 7.2, 7.3, 7.4, 7.5 | Discuss readings = **0.5 hours** |
| **Exemplar: Presentation of Methodology and Findings**  **Review** the following example project, available on Blackboard: [Presentation of Methodology and Findings - Exemplar with Names](https://blackboard.gmercyu.edu/bbcswebdav/pid-1089042-dt-content-rid-4943532_1/xid-4943532_1) | |  | Discuss readings = **0.5 hours** |
| ***Supplemental Resources and Activities***  *Explore these optional resources to deepen your understanding.* | | ***Alignment*** | ***AIE*** |
| **Resource: Critical Values**  **Review** [Critical Value](http://stattrek.com/statistics/dictionary.aspx?definition=critical%20value)  Feel free to post questions and comments about these resources in the General Questions & Discussion forum. | | 7.2, 7.3, 7.4, 7.5 | Discuss readings = **0.5 hours** |
| ***Graded Assignments***  *Complete these graded assessments by the end of the week unless specified otherwise.* | | ***Alignment*** | ***AIE*** |
| **Team Research Project: Final Presentation**  Over the last seven weeks, your team has identified a research question, refined its research methodology, and analyzed faux data from your survey instrument, a Likert-scale questionnaire. Now, you will complete your analysis and deliver your team’s presentation.  **Part I: Complete your data analysis**  **Add** a t statistic calculation to your team’s Faux Data Excel file. Use the *T Test Example* file, located on Blackboard, as a guide. This file shows you how to perform the necessary calculations using some basic Excel functions.  **Part II: Presentation**  **Create** a 9-slide PowerPoint that presents your team’s research topic, methodology, and results. The following slides and titles should be used (you can copy-paste tables from your team’s Faux Data Excel file into the PowerPoint slides or import screenshots):   * **Slide 1**. Title page (include project title and all research support group members) (24 pts) * **Slide 2**. Research question, null hypothesis, and alternative hypothesis (24 pts) * **Slide 3**. Present the questionnaire you used to measure your attitudinal variable (24 pts) * **Slide 4**. Describe your sampling methodology (24 pts) * **Slide 5**. Present frequencies and percentages for your categorical variable (30 pts) * **Slide 6**. Present the means and standard deviations for your attitudinal variable (24 pts)   **Slide 7**. Present the t statistic for a test of mean differences between the two groups on the attitudinal variable (60 pts)   * **Slide 8**. Discussion and conclusion (60 pts). **Note:** This slide includes new information which your team should discuss thoroughly prior to finalizing the presentation. You will receive points for excellent quality of analysis and thought in your conclusions. Consider the following questions:   + If you found a significant effect, what do you think is the reason? Could there be more than one reason to explain the significant result? Elaborate.   + If you found a non-significant result, could this be due to a weakness in the study design? If yes, what might be a possible weakness or weaknesses? * **Slide 9**. Five references (30 pts, 6 per appropriate reference listed)   **Note:** You must either include detailed speaker notes on each slide OR audio narration on each slide. If you wish to include audio narration, you may submit a PowerPoint file with narration synced or you may host it as a video (e.g. on YouTube or another hosting service) and submit a link.  **Select** one member of your team to **submit** your team’s presentation and final Faux Data Excel file by Sunday 11:5PM (EST). | | CLO1, CLO2, CLO3, CLO4, CLO5, CLO6 | Group Project =  **3 hours** |
| **Total** |  |  | **6 hours** |

# Breakdown of Academic Instructional Equivalencies

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|  | **AIE Hours** |
| **Week 1** |  |
| Required | 6 hours |
| Supplemental | 1 hour |
| **Week 2** |  |
| Required | 6 hours |
| Supplemental |  |
| **Week 3** |  |
| Required | 6 hours |
| Supplemental |  |
| **Week 4** |  |
| Required | 5.5 hours |
| Supplemental |  |
| **Week5** |  |
| Required | 4 hours |
| Supplemental |  |
| **Week 6** |  |
| Required | 4.5 hours |
| Supplemental |  |
| **Week 7** |  |
| Required | 6 hours |
| Supplemental |  |
|  |  |
| **Total Required Hours** | 38 |
| **Total Supplemental Hours** | 1 |
| **Total Hours** | 39 |