Introduction to Educational Research and Statistics
CEST 6300 ~ Internet Streaming
New Orleans Baptist Theological Seminary
Christian Education Division
Mondays, 6:00-8:00 pm ~ Fall 2017

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The mission of New Orleans Baptist Theological Seminary is to equip leaders to fulfill the Great Commission and the Great Commandments through the local church and its ministries.

Purpose of the Course
The purpose of this course is to provoke student mastery of basic tools in research design and statistical analysis -- the advanced languages of Christian education. These tools include both a required vocabulary to help students become better consumers of academic research, and the requisite skills for designing an original study, collecting valid data, and analyzing collected data in order to answer real world questions that confront contemporary educational ministries. Essentially, CEST 6300 is a language course, laying the linguistic and conceptual foundation for analyzing empirical research in doctoral seminars, and eventually writing a research prospectus, conducting original research, and writing a formal dissertation.

Core Value Focus
Doctrinal Integrity – Knowing that the Bible is the Word of God, we believe it, teach it, proclaim it, and submit to it. The doctrinal statements used in our evaluations are our Articles of Religious Belief and the Baptist Faith and Message Statement.
Spiritual Vitality – We are a worshiping community, with both personal spirituality and gathering together as a Seminary for the praise and adoration of God and instruction in His Word.
Mission Focus – We are not here merely to get an education or to give one. We are here to change the world by fulfilling the Great Commission and the Great Commandments through the local church and its ministries.
Characteristic Excellence – What we do, we do to the utmost of our abilities and resources as a testimony to the glory of our Lord and Savior Jesus Christ.
Servant Leadership – We follow the model of Jesus and exert leadership and influence through the nurture and encouragement of those around us. Annually, the President designates a core value that will become the focus of pedagogy for the year. For 2017-2018 academic year that Core Value is Servant Leadership.

Curriculum Competencies Addressed

New Orleans Baptist Theological Seminary curriculum is guided by seven basic competencies: biblical exposition, Christian theological heritage, disciple making, interpersonal skills, servant leadership, spiritual and character formation, and worship leadership.

This course will emphasize the following curriculum competencies:

1. Disciple Making: To stimulate church health through mobilizing the church for missions, evangelism, discipleship, and church growth.
2. Servant leadership. To serve churches effectively through team ministry.
3. Spiritual and Character Formation: To provide moral leadership by modeling and mentoring Christian character and devotion.

Course Description

The course explores (1) the nature of science as a way of knowing, (2) the scientific method as a means of collecting credible empirical data regarding questions raised by educational ministries, and (3) statistical procedures as the means of analyzing collected data. The biblical basis for honest measures and analyses is found in passages such as “The Lord abhors dishonest scales, but accurate weights are his delight” (Pr 11:1, NIV. See also Lv 19:36; Dt 25:15; Pr 16:11, 20:23; Mi 6:11). Christian ministers can use quantitative methods to improve educational and administrative programs in the local church, taking “captive every thought to make it obedient to Christ” (2 Co 10:5-6, NIV). Through this course, students will construct an educational foundation for doctoral level research and analysis.

Student Learning Outcomes

In order to serve local churches and denominational agencies effectively through Christian education research, the students will demonstrate . . .

1. . . . understanding of the principles of research design, the structure of a formal research proposal, the various types of research, their corresponding approaches to data gathering, and the appropriate statistical procedure for each type by submitting clear and correct assignments and examinations.

2. . . . appreciation for credible data collection and sound statistical analysis by their willingness to give themselves to assignments, discussions, and exam preparation.

3. . . . skill in solving statistical problems by using statistical procedures in an appropriate and competent manner.
Required Text

Course Teaching Methodology

Units of Study
The topics of study (corresponding to chapters in text) that will be covered in the course are as follows:

Unit 1: Research Fundamentals
1. Science and Faith
2. The Research Proposal
3. Measurement Types: Nominal, Ordinal, Interval, Ratio
4. Problem and Hypothesis
5. Introduction to Statistical Analysis: A Meta-Flowchart
6. Synthesis of Related Literature
7. Sampling and Populations
8. Measurement Triad: Objectivity, Validity, Reliability

Unit 2: Research Methods
9. Observation Research
10. Survey Research: Interviews and Questionnaires
11. Testing
12. Attitude Scales
13. Experimental Designs

Unit 3: Statistical Fundamentals
14. Math Review
15. Graphing Data
16. Focus and Scatter: Central Tendency and Variation
17. The Normal Curve
18. Error Rates and Statistical Power

Unit 4: Statistical Procedures
19. One-sample Tests of Difference (z-, t-)
20. Two-Sample Tests of Difference (independent t, matched t)
21. One-Way Analysis of Variance (F); Multiple Comparisons (LSD, FLSD, HSD)
22. Correlation (Pearson r, Spearman rho, Kendall tau)
23. Chi-Square (Goodness of Fit, Test of Independence)

Unit 5: Introduction to Advanced Procedures
24. Ordinal Differences (Wilcoxin T, Mann-Whitney U, Kruskall-Wallis H)
25. n-Way ANOVA, ANCOVA, MANOVA (extra credit)
26. Linear and Multiple Regression (extra credit)

Teaching Method
This course will emphasize a format of teaching and learning that leads to skill-based mastery of vocabulary, concepts, and procedures. This includes weekly reading assignments, writing
assignments, lecture, demonstrations, problem-solving assignments, and conceptual examinations.

**Delivery Format**
The course will be delivered via streaming internet on Mondays, 6:00-8:00 pm and on-line through Blackboard. Since this is designed as a full semester course, no pre-course assignments will be made. See the course overview for weekly units.

**Course Policies**
The following policies will serve to govern both the student and professor for the duration of this course.

**Assignment Submission**
Assignments will be made available to student access on Monday morning. Written work is due Friday night before midnight. Evaluations of two student submissions are due before Sunday midnight. Assignments on posted on time will be docked 50%.

**Assignment Format**
All assignments are to be submitted in Word, WordPerfect, or Rich Text formats. They are to be typed, double-spaced with 12-point font (Times New Roman preferred) and 1-inch margins unless otherwise indicated. You may either “cut and paste” the final draft of each assignment into the appropriate Discussion Board under your personally created thread, or attach the document. Since not every student has both Word and WordPerfect word processors, attach whole documents as PDFs or Rich Text files.

Include a Turabian format cover page that includes name, date of submission and assignment title. A Turabian style guide is available in the NOBTS library and located on the NOBTS website at http://www.nobts.edu/resources/pdf/Extensions.Old/turabiantutor7thjan08.pdf.

**Netiquette**
Appropriate Online Behavior. Each student is expected to demonstrate appropriate Christian behavior when working online on Discussion Boards or whenever interaction occurs through web, digital, or other electronic medium. The student is expected to interact with other students in a fashion that will promote learning and respect for the opinions of others in the course. A spirit of Christian charity is expected at all times in the online environment.

**Academic Honesty Policy**
All graduate and undergraduate NOBTS students, whether on-campus, internet, or extension center students, are expected to adhere to the highest Christian standard of honesty and integrity when completing academic assignments for all courses in every delivery system format. The Bible provides our standard for academic integrity and honesty. This standard applies whether a student is taking tests, quizzes, exams, writing papers, completing Discussion Boards, or any other course requirement.

**NOBTS Grading Scale Percentages**

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
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<tr>
<td>B</td>
<td>85-92%</td>
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<tr>
<td>C</td>
<td>77-84%</td>
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<tr>
<td>D</td>
<td>70-76%</td>
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<tr>
<td>F</td>
<td>0-69%</td>
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Grading Scale by Points, based on 900 points

<table>
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<tr>
<th>Grade</th>
<th>Points</th>
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<tr>
<td>A</td>
<td>837-900</td>
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<tr>
<td>B</td>
<td>765-836</td>
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<tr>
<td>C</td>
<td>693-764</td>
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<td>D</td>
<td>630-692</td>
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<tr>
<td>F</td>
<td>0-629</td>
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Course Grade Computation

The professor will prescribe a grade based upon the student’s satisfactorily completion of the following:

- **Written Assignments (20x14)**: 280 points
  - Due each Friday by midnight
- **Written Responses (10x14)**: 140 points
  - Due each Sunday by midnight
- **Unit Exams (20x14)**: 280 points
  - Due each Sunday by midnight
- **Intellectus Statistics Assignments (20x10)**: 200 points
  - Due as scheduled
  - 900 points

Course Schedule Legend

The following course schedule provides a concise overview of the course. Elements in this overview match elements in the Blackboard course itself. The following explanations will help you connect the Schedule with the Blackboard course.

**Week ~** The course is divided into 14 weekly units (with an extra credit 15th). Blackboard uses the term “Unit” rather than “Week” since the course can be offered in other than “weekly” formats.

Sign into Blackboard CEST 6300 and find a purple column on the left of the screen. Major headings include Course Title, Home Page, Announcements, Course Essentials, and Weekly Schedule.

The links under “Weekly Schedule” correspond to the numbered weeks in the Syllabus “Course Schedule.” Click on any Unit link to see the assignments for that unit/week. Use these links to plan ahead.

The On-line Course Syllabus (this PDF document) is located under “Syllabus.”

The course textbook (PDF files) is located under “Textbook.”

Reading assignments in the Syllabus Schedule refer to this text.

Introductory Videos are located under “Course Documents.”

Supplemental Reading is located under “Course Articles.”

The folder “Discussion Boards” contain re-stated assignments week by week and gives access to “Create Thread” where you create your weekly post and respond to the posts of fellow students. Boards become available each Monday morning for the 15 weeks of the course. “Assigned Questions X” in the Schedule refers to Questions displayed under the BB “Weekly Schedule” link and the “Discussion Board” assignments for Week (Unit) “X.”
The folder “Assignments” contains the (redundant) Course Schedule contained in this syllabus (next).

The folder “Examinations” contains the weekly “Unit Exams” (Exam 1, 2, 3 . . . )
<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPICS</th>
<th>ASSIGNMENTS</th>
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</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td><strong>1</strong></td>
<td><strong>Introduction to Research Design and Statistical Analysis</strong>&lt;br&gt;The Research Proposal</td>
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<tr>
<td><strong>RESEARCH DESIGN: Fundamentals</strong></td>
<td><strong>2</strong></td>
<td><strong>Empirical Measurement: Data Types</strong>&lt;br&gt;Problems and Hypotheses</td>
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<td><strong>3</strong></td>
<td><strong>The Statistical Flowchart</strong>&lt;br&gt;Synthesis of Related Literature</td>
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<td><strong>4</strong></td>
<td><strong>Populations and Sampling</strong>&lt;br&gt;The Measurement Triad</td>
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<tr>
<td><strong>RESEARCH DESIGN: Methods</strong></td>
<td><strong>5</strong></td>
<td><strong>Observation</strong>&lt;br&gt;Survey Methods</td>
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<td></td>
<td><strong>6</strong></td>
<td><strong>Creating Test Items and Tests</strong>&lt;br&gt;Creating Attitude Scales</td>
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<td></td>
<td><strong>7</strong></td>
<td><strong>Experimental Designs: Cause and Effect</strong>&lt;br&gt;Research Design Review</td>
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<tr>
<td><strong>STATISTICAL ANALYSIS: Fundamentals</strong></td>
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<tr>
<td>Lesson</td>
<td>Topic</td>
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<td>8</td>
<td>Introduction to Mathematical Terms</td>
<td>View Introductory Video 8</td>
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<td></td>
<td>Graphing Data</td>
<td>Read chapters 14-15</td>
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<td>Answer “Assigned Questions 8” and Post Exam 8</td>
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<td>9</td>
<td>Central Tendency and Variation</td>
<td>View Introductory Video 9</td>
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<td>The Normal Curve Defined</td>
<td>Read chapters 16-17</td>
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<td>Answer “Assigned Questions 9” and Post Exam 9</td>
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<tr>
<td>10</td>
<td>The Normal Curve and Error Rates</td>
<td>View Introductory Video 10</td>
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<td></td>
<td>Statistical Fundamentals Review</td>
<td>Read chapter 18 and Review</td>
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<td>Answer “Assigned Questions 10” and Post Exam 10</td>
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<td></td>
<td><strong>STATISTICAL ANALYSIS: Procedures</strong></td>
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<td>11</td>
<td>One-Sample z- and t-Tests</td>
<td>View Introductory Video 11</td>
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<td>Independent and Matched t-Tests</td>
<td>Read chapters 19-20</td>
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<td>Answer “Assigned Questions 11” and Post Exam 11</td>
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<td>12</td>
<td>One-Way Analysis of Variance (ANOVA)</td>
<td>View Introductory Video 12</td>
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<td>Multiple Comparison Procedures</td>
<td>Read chapter 21</td>
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<td>Answer “Assigned Questions 12” and Post Exam 12</td>
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<td>13</td>
<td>Correlation</td>
<td>View Introductory Video 13</td>
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<td></td>
<td>Chi-Square Tests</td>
<td>Read chapters 22-23</td>
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<td>Answer “Assigned Questions 13” and Post Exam 13</td>
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<td>14</td>
<td>Ordinal Tests of Difference (small n)</td>
<td>View Introductory Video 14</td>
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<td>Read chapter 24 and Review</td>
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<td>Answer “Assigned Questions 14” and post Final Exam 14</td>
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<td>15</td>
<td>Factorial ANOVA, ANCOVA, MANOVA</td>
<td>View Introductory Video 15</td>
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<td>Linear and Multiple Regression</td>
<td>Read chapters 25-26</td>
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<td><em>(extra credit)</em></td>
<td>Answer “Assigned Questions 15” and post Final Exam 15</td>
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*The professor reserves the right to make changes to the schedule as needed.*
Final Note: *Intellectus Statistics*

This course will make use of an on-line statistical package called *Intellectus Statistics* to introduce you to statistical procedures and statistical analysis. While limited in scope compared to SPSS, *IS* is a new generation of statistical software that walks you through the procedural steps of analysis and even writes out an interpretation of findings in APA format. It is like having a statistical companion.

While you will still need to master statistical concepts and procedures, *IS* eliminates much of the trial-and-fail experiences students often suffer under SPSS. You will have ten assignments using *IS* software. You will need to buy a license for the course, which costs at this writing $65 for the entire semester. Thereafter, you can rent *IS* a month at a time for $60. You will do all your data gathering and organization in *Excel*, upload the Excel file into *IS*, and then run one or more analyses on this data. More than one test can be done at a time. *IS* will format a Word document that contains a report of the findings, graphs and charts summarizing findings, and narratives explaining the outcomes for each procedure run.

We will walk you though the steps as we move through the course. Since I am giving you the textbook, and saving you hours of learning the syntax of SPSS commands, I believe you will find the $65 investment worth every penny.


**Selected Bibliography**


While these texts could prove helpful, the understanding of the many key concepts, symbols, terms, and procedures found in the course text are most important. The text is designed as an educational text, developed over 32 years of teaching graduate level courses. It will help you become fluent in research design and statistical analysis. RY