



# Educational Research and Statistics

CEST 6300

New Orleans Baptist Theological Seminary

Christian Education Division

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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.*

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## **Purpose of the Course**

The purpose of this course is to provide students mastery of basic tools in research design and statistical analysis -- the advanced languages of Christian education. These tools include required vocabulary to make students a better consumer of research information worldwide, and the skills to design an original study, collect valid data, and analyze that data to provide answers to great questions that confront contemporary educational ministries. Finally, this course prepares students to analyze empirical research in doctoral seminars, and conduct original research and write 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 **2014-2015** academic year that Core Value is *Spiritual Vitality*.

## **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 provide moral leadership by modeling and mentoring Christian character and devotion.
3. *Spiritual and Character Formation*: To provide moral leadership by modeling and mentoring Christian character and devotion. As a ministry leader, intentionally engage in the process of growing in relationship with God and becoming conformed to Christ through the power of the Holy Spirit.

## **Course Description**

The course explores the nature of science as a way of knowing, the scientific method as a means of collecting real-world data in the process of solving problems in educational ministries, and statistics as the means of analyzing the meaning of measurements. “The Lord abhors dishonest scales, but accurate weights are his delight” (Pr 11:1, NIV). 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). Students will lay 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**

Yount, William. *Research Design and Statistical Analysis for Christian Ministry, 5<sup>th</sup> ed.* Fort Worth: Self-published, 2015. (Free download from Blackboard: “*Content*”)

## 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, Kruskal-Wallis H)
25. n-Way ANOVA, ANCOVA, MANOVA
26. Linear and Multiple Regression

### 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 reading assignments, writing assignments, lecture, demonstrations, problem-solving, and conceptual examination.

### Delivery Format

The course will be delivered in a workshop format. [Pre-workshop assignments will prepare students for the intensive week-long study of research design and statistical analysis.](#) Written

exams will be administered during in-class sessions.

### **Course Policies**

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

#### **Assignment Submission**

All assignments are to be submitted at the *beginning* of class on the due date. Assignments not submitted *at the beginning of class* are considered *late* and late assignments will incur *an initial 10-point penalty* and *accumulate a one-point penalty for each additional day*. Late assignments are due no later than the final day of class, *no exceptions*. *If all course assignments are not received by the final day of class, a grade of zero is automatically earned for the missing assignments.*

#### **Pre-Assignments** (details on BB under “Content” : “Pre-Post-Assignments”)

Pre-Workshop Assignment 1 ([May 25](#))

Read Chapters 1-6 and answer specified Study Questions.

*Write Thesis, Problem, and Hypothesis and set aside for revision next week.*

**Submit Answers on BB “Discussion Board” (by [May 31](#))**

Pre-Workshop Assignment 2 ([June 1](#))

Chapters 7-10 and answer specified questions. Revise Thesis-Problem-Hypothesis

**Submit Answers and Thesis-Problem-Hypothesis on BB (by [June 7](#))**

Pre-Workshop Assignment 3 ([June 8](#))

Chapters 11-13 and answer specified questions.

**Submit Answers on BB (by [June 14](#))**

Pre-Workshop Assignment 4 ([June 15](#))

Chapters 14-15 and answer specified questions.

**Submit Answers on BB (by [June 21](#))**

#### **Post-Assignments**

Post-Workshop Assignments: Final Exam, Mini-proposal

Introduction. Thesis. Problem. Hypothesis. Population. Sampling. Statistic. Criterion.

**Submit (1) Final Exam on BB, (2) Mini-Proposal (by [July 24](#))**

#### **Assignment Format**

All assignments are to be typed, double-spaced with 12-point font (Times New Roman preferred) and 1-inch margins unless otherwise indicated. Assignment pages should be stapled together with 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 web site at <http://www.nobts.edu/resources/pdf/Extensions.Old/turabiantutor7thjan08.pdf>.

#### **Absences**

Class attendance is essential for effective learning. In the case of workshops, students are expected to begin class Monday, 1:00 pm, and end with the class on Friday, 12:00 pm. Students

are expected to attend every class session. A grade of “F” will be assigned to students who fail to attend class the minimum number of hours.

### **Classroom and On-line Decorum**

Classroom participation is required for *every class session* due to the nature of the bi-weekly format of the course. A positive attitude can only enhance the learning experience. Therefore, for the purposes of this class, a *positive attitude* and *participation* are defined as productive and interactive engagement with classroom presentations and classroom dialogues throughout a full class session. You cannot participate effectively if you are not focused on the subject matter while in the classroom. Consequently, the student is expected:

- To come to class with a constructive point of view, prepared to interact with the readings and resources on the course topic in discussion groups and classroom dialogues.
- To dress appropriately and in accordance with the NOBTS Student Handbook (i.e., *no ball caps or flip-flops*).
- To turn off cell phones and not to accept any phone calls during class.
- To use laptops, iPads and other electronic devices appropriately to enhance class participation and abstain from social media (i.e., Face Book, messaging, etc.) and ministry responsibilities (e-mails, web site updates, etc.) during class sessions.

### **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.

### **Grading Scale**

A 100-93      B 92-85      C 84-77      D 76-70      F 69 and below

### **Course Evaluation**

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

<i>Pre-Workshop</i>	20%	<i>Month preceding Workshop</i>
<i>Research Exam</i>	20%	<i>Day 2</i>
<i>Statistics Exam One</i>	10%	<i>Day 4</i>
<i>Statistics Exam Two</i>	10%	<i>Day 5</i>
<i>Final Exam</i>	20%	<i>On-line during week following workshop</i>
<i>Mini-Proposal</i>	20%	<i>Post-workshop assignment</i>

## Course Schedule

Educational Research CEST 6304							
	Monday	Tuesday	Wednesday	Thursday	Friday		
8	Review Preliminary Work	13. Experimental Designs	17. The Normal Curve	Stat Exam One (14-20)	Stat Exam Two (21-26)	8	
9		- Buffer -	18. Error Rates and Power	21. 1-Way ANOVA	Mini-Proposal Lab	9	
10		Study Lab	17-18 Redux	22. Correlation	Review Exams	10	
11		lunch	lunch	lunch	lunch	Post-Workshop Assignments	11
12							
1	1. Science and Faith 2. Research Proposal	Research Exam (1-13)	19. 1-Sample z-, t-Tests	23. Chi-Square Tests	Post-Assignment: Mini-Proposal Final Exam (BB)	1	
2	3. Measurement Types 4. Problem & Hypothesis	14. Math Review 15. Graphing	20. 2-Sample t-Tests	24. Ordinal Differences		2	
3	5. Introduction to Statistics 6. Synthesis of Related Lit	16. Focus and Scatter	Review Chapters 5, 14-20	25. Factorial ANOVA 26. Regression		3	
4	Dinner					4	
5			<div style="border: 1px solid black; padding: 5px;">           2 Ti 2:15-16            "Do your best ["Study"] to present yourself to God as one approved, a workman who does not need to be ashamed and who correctly handles the word of truth. Avoid godless chatter, because those who indulge in it will become more and more ungodly." NIV         </div>			5	
6	7. Sampling 8. Measurement Triad					6	
7	9. Observation Research 10. Survey Research					7	
8	11. Testing 12. Attitude Scales					8	
9						9	

\*The professor reserves the right to make changes to the schedule as needed.

\*\*Students are responsible for all assigned readings. All readings may not be covered in class.

## Selected Bibliography

Creswell, John W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 4<sup>th</sup> ed. Los Angeles: Sage Publications, Inc. 2014

Houser, Rick A. *Counseling and Educational Research: Evaluation and Application*, 3<sup>rd</sup> ed. Los Angeles: Sage Publications, Inc. 2015

Johnson, R. Burke and Larry Christensen. *Educational Research: Quantitative, Qualitative, and Mixed Approaches*, 5<sup>th</sup> ed. Thousand Oaks, California: SAGE Publications, Inc. 2014

Pelham, Brett W. *Intermediate Statistics: A Conceptual Course*. Thousand Oaks, California: SAGE Publications, Inc. 2013