

California State University, Stanislaus
Doctor of Education (Ed.D.), Educational Leadership
EDEL 9002 – Applied Quantitative Research Syllabus
(3 Semester Units)

PROGRAM FOCUS

Candidates who successfully complete the requirements of the doctoral program will possess the skills and knowledge to serve as exemplary instructional leaders such as administrators, teachers, counselors, and in other roles that are associated with the improvement of instruction and learning in a preK-12 or community college setting. They will have the interpersonal skills, oral and written proficiency, planning and organizational capability, and problem solving capacity to provide direction, guidance and support to other educators in the pursuit of improving the quality of education for children, adolescents, and adult learners.

COURSE DESCRIPTION

This course is designed for doctoral students to gain an understanding of advanced quantitative research methods and statistical analyses concepts, with an emphasis on concepts rather than mathematical and computational formulae. The selected text presents quantitative designs and analytic techniques most needed by students in education as a basis for their work on advanced research.

The course focuses on applied multivariate statistical methods and analyses. Students read and critically evaluate empirical research; engage in structured class activities to generate quantifiable research questions and hypotheses; design and implement original empirical studies related to P-14 practices for the improvement of teaching and learning; and write research results. Emphasis is on the relationship between research and practice.

STUDENT LEARNING OUTCOMES

The student will be able to:

1. Foster professional growth opportunities in educational organizations that are research-based and dedicated to the improvement of teaching and learning. (2.2)
2. Demonstrate knowledge of research-based models for student learning interventions. (2.3)
3. Employ a variety of descriptive and inferential research methodologies in investigating the effectiveness of school policies and programs and their impact on student learning. (3.2)
4. Apply research on the social, emotional and cognitive growth of students and the role of languages and culture to students' academic development and achievement. (3.3)
5. Demonstrate advanced knowledge of the research literature related to professional practices in education. (4.1)
6. Conduct a significant applied research study in his/her areas of focus. (4.2)
7. Publish and present research findings that contribute to the general body of knowledge of instructional leadership and the improvement of student learning and achievement. (4.3)

CORE ELEMENTS

In order to achieve the above outlined program goals & student learning objectives, this course includes the following core elements, which are threaded throughout the coursework offered in the program:

- Assessment and Evaluation – R
- Data-driven Decision Making – R
- Applied Quantitative Inquiry – A
- Applied Research – A
- Professional Practice - R

Key: I = Element is Introduced, R = Element is Reinforced, A = Element is Addressed at an Advanced Level

PEDAGOGY

Each class will typically begin with discussion of the content assigned as reading for the week. Articles and application questions will be discussed in small or large-group format. The last hour of most classes will be spent in a computer laboratory, working with SPSS statistical software. *Blackboard*, a learning management system, will be used extensively to link to required readings online, provide access to resources, submit all graded materials, communicate with group members, read feedback on submitted materials, and self-evaluate SPSS activities.

REQUIRED TEXTBOOKS

Vogt, W. P. (2006). *Quantitative research methods for professionals in education and other fields*. Boston, MA: Pearson Education.

Green, S.B. and Salkind, N.J. (2005). *Using SPSS windows: analyzing and understanding data* (4 ed). N. Jersey: Prentice Hall, Inc.

REQUIRED SCHOLARLY AND RESEARCH ARTICLES

Bahr, P. R., Horn, W. & Perry, P. (2004). Student readiness for postsecondary coursework:

Developing a college-level measure of student academic performance. *Journal of Applied Research in the Community College*, 12(1), p. 7-16.

Barkatsas, A. & Malone, J. (2005). A typology of mathematics teachers' beliefs about teaching and learning mathematics and instructional practices. *Mathematics Education Research Journal*, 17(2), p. 69-90.

Behrman, E. H. & Street, C. (2005). The validity of using a content-specific reading comprehension test for college placement. *Journal of College Reading and Learning*, 32(2), p. 5-21.

Clements, M. A., Reynolds, A. J. & Hickey, E. (2004). Site-level predictors of childrens' school and social competence in the Chicago child-parent centers. *Early Childhood Research Quarterly*, 19(2), p. 273-96.

Cornelius-White, J. (2007). Learner-centered teacher-student relationships are effective: A meta-analysis. *Review of Educational Research*, 77, 113-143.

Crane, L. R., Gustafson, J. L. & Poziemski, C. (2000). Motivational aspects of reading and its measurement in community college students. *Journal of Applied Research in the Community College*, 7(2), p. 87-99.

Diamond, John B., et. Al. (2004). "Teacher's Expectations and Sense of Responsibility for Student Learning: The Importance of Race, Class, and Organizational Habitus." *Anthropology and Education Quarterly*, Vol. 35, No. 1, p. 75-98.

- Diamond, P. J. & Onwuegbuzie, A. J. (2001). Factors associated with reading achievement and attitude among elementary school-aged students. *Research in the Schools*, 8(1), p. 1-11.
- Fisher, M. E. & Sandiford, J. R. (2000). A comparison of academic performance of students with general education development credentials and high school graduates at a select community college. *Journal of Applied Research in the Community College*, 8(1), p. 5-13.
- Garavalia, L., & Ray, M. (2003). Distinctions among subgroups of developmental students: Differences in task value, self-regulated learning, and grade expectations. *Research & Teaching in Developmental Education*, 19(2), p. 29-40.
- Hardy, D. & Laanan, F. (2006). Characteristics and perspectives of faculty at public 2-year colleges. *Community College Journal of Research and Practice*, 30(10), p. 787-811.
- Huck, S.W. (2007). *Reading statistics and research* (5th ed). Boston, MA. Pearson Education, Inc.
- Hyers, A. D. & Zimmerman, A. (2002). Using segmentation modeling to predict graduation at a two-year technical college. *Community College Review*, 30(1), p. 1-26.
- Isiksal, M. & Askar, P. (2005). The effect of spreadsheet and dynamic geometry software on the achievement and self-efficacy of 7th grade students. *Educational Research*, 47(3), p. 333-350.
- Kazelskis, R., Thames, D. & Reeves, C. (2004-05). Reliability and stability of Elementary Reading Attitude Survey (ERAS) scores across gender, race, and grade level. *Professional Educator*, 27(1-2), p. 29-37.
- Ladson-Billings, G. (2000). "Racialized Discourses and Ethnic Epistemologies" in Denzin, N. and Lincoln, Y, *Handbook of Qualitative Research*, p. 257-278. Thousand Oaks, CA: Sage Publications, Inc.
- Lewis, R. L. & Vasisith, S. (2005). An activation-based model of sentence processing as skilled memory retrieval. *Cognitive Science*, 29(3), 375-419.
- Ma, X. & Xu, J. (2004). Determining the causal ordering between attitude toward mathematics and achievement in mathematics. *American Journal of Education*, 110(3), p. 256-275.
- Migliorino, N. J. & Maiden J. S. (2004). Educator attitudes toward electronic grading software. *Journal of Research on Technology in Education*, 36(3), p. 193-212.
- Milem, J. F. & Umbach, P. D. (2003). The influence of precollege factors on students' predispositions regarding diversity activities in college. *Journal of College Student Development*, 44(5), p. 611-24.
- Miller, M., Pope, M. & Steinmann, T. (2006). Trait and behavioral differences among community college students based on gender: Results of a national study. *Community College Journal of Research and Practice*, 30(9), p. 715-728.
- Sandiford, J. J. & Jackson, K. D. (2003). Predictors of first semester attrition and their relation to the retention of generic associate degree nursing students. Eric Document Reproduction Services Number ED481947.
- Smagorinsky, P. (2007). A renew of doing educational research: a handbook by Kenneth Tobin and Joe Kincheloe (eds.). *Educational Researcher*, vol. 36, No. 4, p. 199-203.

- Smith, L.T. (1999). "Twenty-Five Indigenous Projects," in *Decolonizing Methodologies*, p. 142-162. New York: Zed Books Ltd.
- Smith, L.T. (1999). "Research Through Imperial Eyes," in *Decolonizing Methodologies*, p 42-57. New York: Zed Books Ltd.
- Snyder, V., Hackett, R. K., & Stewart, M. (2003). Predicting academic performance and retention of private university freshmen in need of developmental education. *Research & Teaching in Developmental Education*, 19(2), p. 17-28.
- Solórzano, Daniel G. and Delgado Bernal, Dolores (2001). "Examining Transformational Resistance Through a Critical Race and LatCrit Theory Framework: Chicana and Chicano Students in an Urban Context." *Urban Education*, Vol. 36, No. 3. May, pp. 308-342.
- Spurling, S. (2000). The effect of process interventions and matriculation services on student persistence and success. *Journal of Applied Research in the Community College*, 8(1), p. 31-41.
- Tieso, C. L. (2007). Patterns of overexcitabilities in identified gifted students and their parents: A hierarchical model. *Gifted Child Quarterly*, 51, 11-22.
- Tovar, E. & Simon, M. A. (2006). Academic probation as a dangerous opportunity: Factors influencing diverse college students' success. *Community College Journal of Research & Practice*, 30(7), p. 547-564.
- Tucker, S. Y., Stewart, D., & Schmidt, B. J. (2003). Teaching and learning styles of Community College business instructors and their students: relationship to student performance and instructor evaluations. *New Horizons in Adult Education*, 17(2), p. 11-20.
- Vaughan, W. (2002). Effects of cooperative learning on achievement and attitude among students of color. *Journal of Educational Research*, 95(6), p. 359-64.
- Watt, H. M. (2000). Measuring attitudinal change in mathematics and English over the 1st year of junior high school: A multidimensional analysis. *Journal of Experimental Education*, 68(4), p. 331-61.
- Williamson, D. M., Bauer, M., Steinberg, L. S. (2003). Creating a complex measurement model using evidence centered design. Eric Document Reproduction Services Number ED477927.
- Yore, L. D. & Anderson, J. O. (2005). Modeling the relationships of classroom characteristics and student attributes to students' science achievement. Eric Document Reproduction Services number ED463183.

GRADED ASSIGNMENTS

Students are expected to demonstrate a high level of scholarship in all activities and assignments in keeping with the norms of doctoral level coursework.

- 1) *Research Prospectus* (50 points). Students select a topic and write a prospectus related to a quantitative study based on this topic. It includes an introduction; statement of the problem; description of the significance of the study; research questions; hypotheses; an outline of the theory related to the study; a brief literature review related to the topic; and a discussion of the sample, design, and data analyses. A

scoring rubric is posted in Blackboard, as is more detailed information regarding the requirements of the assignment. (Addresses Student Learning Objectives 2.2, 3.2, 3.3, 4.1, 4.2, and 4.3)

2) *Research Activity* (50 points). Students will work in self-selected groups of 3-4 members to explore research questions and hypotheses derived from existing data collected at the Center for Direct Instruction or from local school or district sites. Group members will work together to produce a research report in the format required of a group-selected peer-reviewed scholarly journal. Results will be presented to the class, and full articles will be made available to the class in Blackboard. The contribution/participation of each group member will be evaluated by other group members; it is expected that each group member will fully participate, sharing in all elements of the final document. A scoring rubric is posted in Blackboard, as is more detailed information regarding the requirements of the assignment. (Addresses Student Learning Objectives 2.2, 2.3, 3.2, 3.3, 4.1, 4.2, and 4.3)

3) *Laboratories* (5 points each, 60 points total). These are assignments involving applications of course material using SPSS. The labs will be introduced in class and there will be time to begin the assignments in the computer laboratory. Some of you may finish in class while others may need additional time to complete the work; time needed is dependent upon competency with SPSS and the computer in general, and proficiency with course content. Answers for the labs will be posted in Blackboard so you can self-check. It is your responsibility to ensure that you fully understand the material. All completed labs must be submitted to Blackboard, with appropriate SPSS output tables to document that the analyses were run correctly. (Addresses Student Learning Objectives 2.3, 3.2, and 4.2)

4) *Statistics Exam* (50 points). This is an individual exam. Data sets in SPSS are provided and used for the exam analyses. You will determine the appropriate analyses to run based on a variety of listed hypotheses, and then you will carry out the analyses and report results. Scoring criteria are included on the test. You will have one week to complete the exam and submit your completed responses to Blackboard; this will include the SPSS output tables as well as explanations of responses. (Addresses Student Learning Objectives 2.3, 3.2, and 4.2)

5) *Final Exam* (50 points). Essay questions relate to quantitative research methods and analyses. (Addresses Student Learning Objectives 2.3, 3.2, and 4.3)

GRADING POLICY

Earned points will be summed across the four assignments and the final examination grades reflect expectations for doctoral-level proficiency. As a professional, each doctoral student is expected to attend class weekly and participate fully in discussions and group projects. Failure to do so may result in grade reduction.

Assignments must be students' own work. Plagiarism is unacceptable, a violation of academic conduct, and subject to disciplinary action.

OUTLINE OF WEEKLY ACTIVITIES

Week	Topic(s) and Laboratory Activities	Assigned Reading*
1	Research Design, Measurement, Analysis, and SPSS Software	Huck (throughout) Green (throughout)
2	Standard Deviation, Correlation, and Descriptive Statistics	Vogt, p. 5-39, 57-75 Tucker et al Watt
3	Variables, Hypothesis Testing, Statistical Inference, Surveys, Sampling, Testing, and Meta-analyses	Vogt, p. 40-56, 76-94, 128-144 Garavalia & Ray Vaughan Cornelius-White Crane & Poziemski Hardy & Laanan
4	Experiments and Random Assignment, Variance and Covariance Reliability and Validity	Vogt, p. 95-112, 113-127 Fisher & Sandiford Isiksal & Askar Spurling Behrman & Street
5	Categorical Variables Uses and Limitations of Nonparametric Univariate Statistics	Vogt, p. 191-213 Miller et al Migliorino & Maiden Milem & Umbach
6	Rethinking Dominant Research Paradigms and Epistemologies	Diamond Ladson-Billings Smith Solórzano
7	Using and Interpreting Regression Analysis	Vogt, p. 145-162 Sandiford & Jackson Clements & Hickey
8	Appropriate Uses of Multi-Level Models, Multi-variant Methods, and Parametric Statistical Models	Vogt, p. 163-190 Snyder et al Yore & Anderson
9	Using, Interpreting, and Reporting Factor Analysis, Main Effects, and Complex Variable Analysis	Vogt, p. 230-246 Tieso Barkatsas & Malone Vogt, p. 214-229, 247-260 Williamson et al Hyers & Zimmerman Ma & Xu
10	Inferential Uses of Multiple Linear Path Analysis, Discriminate Function Analysis, and Canonical Correlation	Bahr et al Diamond & Onwegbuzie Lewis & Vasishth
11	Test Item Analysis Program Evaluation and Testing Models	Vogt, p. 276-293 Tovar & Simon Kazelskis & Reeves
12	Group Research Presentations	
13	Final Exam and Statistics Exam	

*For articles, choose the P-12 or Community College choices based on your specialization.

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Program Goals and Student Learning Outcomes Addressed in Doctoral Courses

Course Number and Title: **EDEL 9002 Applied Quantitative Research**

Program Goal 1: Visionary Leadership **Addressed**

1.1 Provide visionary leadership focused on systemic educational reform for the improvement of curriculum, teaching, and learning.	
1.2 Create a philosophy for implementing collaborative management practices that involve the active participation of stakeholders in educational improvement.	
1.3 Demonstrate effective cross-cultural written and oral communication skills appropriate for internal and external communities.	
1.4 Demonstrate a comprehensive understanding of educational policy within the context of state and federal school accountability mandates.	
1.5 Demonstrate skills required to balance human, material, and fiscal elements of complex educational organizations.	

Program Goal 2: Teaching and Learning **Addressed**

2.1 Demonstrate ability to establish an ethical educational environment and a commitment to high academic achievement for diverse students.	
2.2 Demonstrate ability to foster professional growth opportunities for professional staff that are research-based and dedicated to the improvement of teaching and learning.	X
2.3 Demonstrate application of research-based models for student learning interventions.	X
2.4 Demonstrate an understanding of the diversity and cultural contexts of schools and communities, and primary languages as they relate to academic development and educational equity.	

Program Goal 3: Program Evaluation **Addressed**

3.1 Demonstrate skill for establishing educational accountability measures through the use of a variety of print and technology-based sources related to instructional leadership and reform.	
3.2 Employ a variety of qualitative, descriptive, and inferential research methodologies in investigating the effectiveness of school policies and programs and their impact on student learning.	X
3.3 Apply research on the social, emotional, and cognitive growth of students and the role of language and culture to students' academic development/achievement.	X
3.4 Demonstrate assessment skills to promote and evaluate student learning.	
3.5 Demonstrate ability to lead internal and external education organization reviews through evidence-based decision-making.	

Program Goal 4: Applied Research **Addressed**

4.1 Demonstrate advanced knowledge of the research literature related to professional practices in education.	X
4.2 Conduct an original and significant applied research study in areas of focus (P-12 Leadership or Community College Leadership).	X
4.3 Publish and present research findings that contribute to the body of knowledge of educational leadership and the improvement of student learning and achievement.	X