

Syllabus

THE UNIVERSITY OF TEXAS AT ARLINGTON GRADUATE PROGRAM

Instructor Information:

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Learning Outcomes:

The design of this course is to provide students with inquiry-based experiences that may be taken into the classroom and used during instruction of Probability and Statistics. The main components of this class are to (a) realize the vertical alignment of the objectives for Probability and Statistics, (b) understand the main concepts needed for the K-12 math curriculum, and (c) discover methods to implement in the classroom that relate real world experiences with concepts students are to master for this objective.

Specific Goals:

1. Review and develop an understanding of the vertical alignment of the objectives needed, as outlined by the National Mathematical Standards of Probability and Statistics. Specifically, the grade levels below and above the one at which the teacher instructs.
2. Develop a deeper sense of the objectives needed for data collection, organization of data, and representation of data through the use of graphs and charts.
3. Enhance instructional methods for Probability and Statistics through the overall understanding of the concepts of statistics that may not be specific to the teacher's grade level.
4. Examine teacher resources for teaching Probability and Statistics including, but not limited to: Internet sources, Children's Literature, and Professional Literature.
5. To develop a "teacher toolbox" for ideas, activities, lesson plans, and children's interactive Web sites to draw upon to further enhance the K-12 student understanding of Probability and Statistical concepts.

Course Description

In this course students will engage in learning experiences and readily usable curricula for teaching children concepts of probability and statistics, their applications, and technology. Students will examine student learning and research-based practices that

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best help students understand these mathematical concepts and that will promote their development of probabilistic reasoning abilities.

CONCEPTUAL FRAMEWORK

The work of the College of Education is grounded in constructivism as a theory of teaching and learning and is done in a spirit of expectation that all involved in the College of Education, whether candidate, faculty or administrator, will hold the following as important: **Excellence, Student-Centered Environments, Research, Collaboration, Diversity, Technology, Field Experiences and Life-Long Learning.**

Partners for the Future serves as the theme of the College of Education and epitomizes the understanding that it takes a village of partners to insure the future of education for all.

COURSE INFORMATION:

Course Title: Probability and Statistics
Course Number: MAED 5353
Semester: Academic Partnership Cohort
Course Location and Time: Online

Textbook(s) and Materials

Online articles and electronic resources as assigned in each module

Course Prerequisites

EDUC 5305, EDUC 5394

Grades

Assignments/Assessment: 70%
Self-Assessments, Progress Monitors: 10%
Discussions: 20%
Total Grade: 100%

Policies

Class Attendance and Assignments

As this course is online, it is expected that all students will access the learning modules as required and complete assignments, discussions, and reflections as directed in the module. Assignments are to be completed and submitted by the posted deadline.

Drop Policy

If you choose to withdraw from the course for any reason, you must follow University procedures. It is your responsibility to execute these procedures correctly and within the deadlines.

Student Expectations

This course is designed to engage students in active learning toward enhancing the knowledge and skills of science, math and pedagogy as would be expected for graduate level expertise. Full participation in course modules, assignments, discussions, reflections and inquiry investigations is expected and required.

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Americans with Disabilities Act (ADA)

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. As a faculty member, I am required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing me of your needs at the beginning of the semester and in providing authorized documentation through designated administrative channels.

Academic Dishonesty

It is the philosophy of UTA that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. I take scholastic dishonesty very seriously – if the excerpt below is unclear, see me. I consider copying directly from the text or Internet sites without proper citation as plagiarism. If in doubt, cite. I do not give credit for plagiarized assignments or cheating on exams and I will refer plagiarism to the Office of Student Judicial Affairs.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents = Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)

Plagiarism

Plagiarism is the presentation of another person's work as your own, whether you mean to or not! Copying or paraphrasing passages from another writer's work without acknowledging that you've done so is plagiarism. Allowing another writer to write any part of your essay is plagiarism. Plagiarism is a serious offense. If you are suspected, you will be called before the Vice President for Student Affairs for disciplinary action. You will be given an incomplete for the course until your case is resolved. Plagiarism is easy to avoid. Simply acknowledge the source of any words, phrases or ideas that you use. If you're not sure how to quote or paraphrase a source or if you need help with the format of endnotes or bibliographies, check with me. While you can (and should) seek the help and advice of friends, classmates, and tutors, be sure that your written work is completely your own.

To learn how to properly acknowledge sources, complete the UTA Library's tutorial located at <http://library.uta.edu/tutorials/Plagiarism/>.

Student Support Services

The University supports a variety of student success programs to help you connect with the University and achieve academic success. They include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

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University Mission

The mission of The University of Texas at Arlington is to pursue knowledge, truth and excellence in a student-centered academic community characterized by shared values, unity of purpose, diversity of opinion, mutual respect and social responsibility. The University is committed to lifelong learning through its academic and continuing education programs, to discovering new knowledge through research and to enhancing its position as a comprehensive educational institution with bachelor's, master's, doctoral and non-degree continuing education programs.

College Mission

The mission of the UTA College of Education is to develop and deliver educational programs that ensure the highest levels of teacher, administrator, and allied health science practitioner preparation and performance. As a recognized contributor to the fields of education and allied health science, the College engages in effective teaching, quality research, and meaningful service. The College is committed to diversity and to the advancement of active teaching and learning in all educational environments and at all levels.

Core Values: Effective Teaching, Active Learning, Quality Research, and Meaningful Service

Lecture Topics/Schedule for Five-Week Session:

Class Module	Topic	Assignment	Due Date
Module 1 Probability and Statistics in the K- 12 Setting (Week 1)	Construct learning activities for developing the topics of probability, statistics, and graphs within the K-12 classroom. Create understanding of the vertical alignment of statistics and probability in accordance with NCTM.	Self-Assessment	11:59 p.m. Wednesday of Week 1
		Progress Monitor	11:59 p.m. Wednesday of Week 1
		Group Discussion: Probability and Statistics Education	First post: Wednesday Final post: Saturday 11:59 PM designated day of Week 1
		Assignment: Overview of Probability and Statistics in the K- 12 Setting	11:59 p.m. Sunday of Week 1
		Reflections	11:59 p.m. Sunday of Week 1

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<p>Module 2 Data Collection, Samples, and Graphs (Week 2)</p>	<p>Create understanding of types of samples including random sample, sample size, and population</p> <p>Create understanding of how children collect and organize data to make informal conclusions and predictions.</p> <p>Collect and display data with the use of graphs and charts.</p> <p>Explore methods for incorporating graphs and charts within the classroom on a daily or weekly basis</p>	Self-Assessment	11:59 p.m. Wednesday of Week 2
		Group Discussion: Pizza! Pizza!	First post: Friday Final post: Sunday 11:59 p.m. designated day of Week 2
		Assignment : Data Collection, Samples, and Graphs	11:59 p.m. Sunday of Week 2
		Reflections	11:59 p.m. Sunday of Week 2
<p>Module 3 Literature in the Math Classroom (Week 3)</p>	<p>Develop ideas for implementing literature to enrich math instruction.</p> <p>Construct understanding of how literature in math aids student comprehension of concepts.</p>	Self-Assessment	11:59 p.m. Wednesday of Week 3
		Group Discussion: Literature in Math Instruction	First post: Friday Final post: Sunday 11:59 p.m. designated day of Week 3
		Assignment : Literature in the Math Classroom	11:59 p.m. Sunday of Week 3
		Reflections	11:59 p.m. Sunday of Week 3

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Module 4 Probability and Outcomes (Week 4)	Develop understanding that the probability of an event is in the range of 0 to 1. Explore the vocabulary of probability. Develop activities to develop data that may be use with percents, decimals, and fractions.	Self-Assessment	11:59 p.m. Wednesday of Week 4
		Group Discussion: Current State of Probability Instruction	First post: Friday Final post: Sunday 11:59 p.m. designated day of Week 4
		Assignment : Probability and Outcomes	11:59 p.m. Sunday of Week 4
		Reflections	11:59 p.m. Sunday of Week 4
Module 5 Descriptive Statistics and Terminology (Week 5)	Summarize data with statistics. Increase understanding of central tendencies terminology and applications. Explore and apply the vocabulary of statistics.	Progress Monitor	11:59 p.m. Saturday of Week 5
		Group Discussion: Current State of Statistics Instruction	First post: Friday Final post: Saturday 11:59 p.m. designated day of Week 4
		Assignment: Descriptive Statistics and Terminology	11:59 p.m. Saturday of Week 5
		Assessment: Probability and Statistics Alignment Project	11:59 p.m. Saturday of Week 5
		Reflections	11:59 p.m. Saturday of Week 5

Course Assignments (60%)

NOTE: Besides the assignments listed below, students are expected to complete Self-Assessments and Progress Monitors (10%), and engage in weekly online discussions (20%).

Module 1: Probability and Statistics in the K-12 Setting (10%)

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For this assignment, you will provide an alignment of the required objectives in Probability and Statistics for the two grades below and above the grade you instruct. If you instruct at more than one grade level, you may choose the one you want to work with.

The following should be included in your report:

1. Provide a chart of the objectives for each grade level. You may copy and paste this from the NCMT or TEA Web site.
2. The differences between the five grade levels.
3. Demonstrate the growth of the objective the student will learn.

Module 2: Data Collection, Samples, and Graphs (10%)

Select one or two data collection prompts provided (or create one or two of your own) and have students record data using their own responses or responses from questioning others. You should have at least fifteen data values to use for graphing.

Once data are collected, help students create one of the graphs listed. Upon completion of the graph, “process” the graph using one of the suggestions listed, or develop your own.

Record the details about the instructional activity in the “Debriefing” sections in this document.

Module 3: Using Literature to Teach Math (10%)

For this assignment, you will choose an activity to do with your class (or group of students) that merges literature with instruction in probability or statistics. You may select an activity that was presented in the readings or media resources from this week, or you may choose one from another resource, or you may design an original activity.

You will plan the details of the activity, then report on student learning, questions, and insights from the lesson.

Module 4: Probability and Outcomes (10%)

Locate two probability games to use with your class. You may use the activities described below, lessons you have previously used during instruction, or new games you have located in other resources of your choice.

For completion of this assignment, you will use the games with your class or a group of students and then provide the following information:

1. Names of games/activities
2. Materials needed and rules/procedures
3. Probability concepts targeted through each activity
4. Summaries of class results and teacher reflection

Module 5: Descriptive Statistics and Terminology (10%)

Find three Web sites to use with teaching and reviewing statistics and probability within the classroom.

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Provide the URL address: Copy/paste the URL from your browser, and then insert a space. This should cause the hyperlink of the URL to activate. (Click on the URL to see if it is active.)

Explain why each Web site would be beneficial for other teachers, including description of specific features or resources and connections to instructional standards.

Project: Probability and Statistics Alignment (20%)

For your final assessment in this course, you will create a PowerPoint presentation of 10 slides or more displaying the main statistical and probability components aligned to your grade level that you have found in this module, including vocabulary, applications, activities, and alignment.

This presentation will be in the form of a staff development presentation to your peers or other teachers at your grade level.