

OKLAHOMA CITY UNIVERSITY

Meinders School of Business

Native American Enterprise Management Certificate Program

Gaming Mathematics

Summer 2016

Syllabus

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Course Description:

In this course students will be introduced to a variety of mathematical techniques covering enterprise operations, gaming outcomes, and the analytics thought process. We begin with an introduction to probability and move quickly into the mathematics of games including slots and finish with table games. We will discuss the mathematics behind play along with operations strategies for affecting revenue in each “games” section.

Course content will be delivered by a series of videos that sync with the 4-week topical format. Students will be required to complete exercises for each video during the week it is assigned. There will be four exams following each week of instruction. The course outline is detailed on the final pages of this document.

How to Get in Touch with Me:

The best way to reach me is via the email address kddean@okcu.edu. I will make every effort to respond to your email within 24 hours. However, I do not check work email on the weekends. So, if you plan to wait until the weekend to begin your weekly exam, make sure you have read through the questions ahead of time and asked for clarification before the weekend begins.

Class Participation and Grading:

Grades will be determined based on student performance in the following two areas:

Exercises:	60%
Exams:	40%

A final “grade average” of 70% is required for passing.

For example, if you received 100% average on exercises and a 70% average on exams, your “grade average” would be:

$$0.6 * 100 + 0.4 * 70 = 88\%$$

Introduction to Probability

Week	Content	Description	Video	Exercises
1	Probability Intro	Introduction to basic probability with simple coin flip example	Simple Probability	1 - Simple Probability
	Rules and Diagrams	4 Probability rules and the introduction of Venn Diagrams	Rules and Venn Diagrams	2 - Rules and Diagrams
	Expected Value	Calculation of expected value of play and dollars required to ensure a "fair game"	Expected Payout	3 - Expected Value
	Probability, Odds, and Payouts	Understand the relationship between calculated probability, wager odds, and payouts.	Probability and Odds	4 - Probability and Odds
	House Edge	Define the concept of House Edge and understand how this advantage affects probability, odds, and payout.	House Edge	5 - House Edge
	Exercise Solutions	Solutions to Module 1 Exercises worked by me	Exercise Solutions	
	Terms	Glossary of Terms that coincide with Module 1		
Exam 1				

Slots Intro - Class 3

Week	Content	Description	Video	Exercises
2	Class 3 Slots	Define IGRA Classes and begin focus on Class 3	Class 3 Gaming Defined	1 - Terms and Classes
	Class 3 Virtual Mapping	Understand how Class 3 machines use virtual mapping to calculate win probabilities	Simple Machine Virtual Mapping	2 - Class 3 Machines
	Par Sheets	Understand the basics of Par Sheets and how they relate to the machines on the floor	Par Sheets	3 - Par Sheets
	Progressives	Introduce local and wide area progressives. Define how payouts work and strategy for enticing play	Progressives	4 - Progressives
	Exercise Solutions	Solutions to Module 2 Exercises worked by me	Exercise Solutions	

Exam 2

Class 2 Slots and Slots Performance

Week	Content	Description	Video	Exercises
3	Class 2 vs. Class 3	Define the difference between Class 2 and Class 3	Class 2 vs. Class 3	1 - N/A
	Lines, Wagers, Basic Mechanics	Understand the operation basics for Class 2 (Server Based) and specify how payouts work	Lines, Wagers, Basic Mechanics	2 - Class 2 Mechanics
	Slots Performance	Discuss Theoretical, Actual, and Metered Win. Introduce comparison of each and implications.	Slots Performance - Key Performance Indicators	3 - Slots Performance
	Exercise Solutions	Solutions to Module 3 Exercises worked by me	Exercise Solutions	

Exam 3

Table Games

Week	Content	Description	Video	Exercises
4	Tribal Games vs. Vegas	Using Blackjack, discuss the difference between the Tribal "house" and the Vegas "house" and how this impacts revenue and game play strategy	Vegas vs. Tribal - Blackjack	1 - N/A
	Blackjack	Discuss the basics of Blackjack strategy and the house hold percentage	Table Games - Blackjack	2 - Blackjack
	Carnival Games - Ultimate Texas Hold'em	Introduce Ultimate Texas Hold'em and discuss the basics of game play	Ultimate Texas Hold'em Game Play	3 - N/A
	UTH Betting	Discuss the mechanics of UTH betting and demonstrate with examples.	Ultimate Texas Hold'em Betting and Examples	4 - N/A
	UTH Betting and Strategy	Discuss the basics of UTH betting, introduce one simple play strategy, and discuss why the play strategy is important for casino revenues	Ultimate Texas Hold'em Betting and Strategy	5 - UTH
	Exercise Solutions	Solutions to Module 4 Exercises worked by me	Exercise Solutions	

Exam 4
