

An Introduction to the Theory and Practice of Poker

An Intersession course; Johns Hopkins University

Professor Avi Rubin

Date, Time: Jan 13-24, M-F 1:30 – 3:00 pm

Location: Homewood campus, Bloomberg 272

Prerequisites: None

Credit Hours: 1, **Grades:** pass/fail

About the Course

This intersession course aims to take students from novices who may know nothing about poker to above average players, in two weeks. The course will utilize hand examples and discussions of common poker situations to study the fundamentals of the game. The math and game-theoretical aspects of poker will be covered, with practical examples of every concept. Lectures will focus on core concepts in Texas Hold `em, with an emphasis on cash games. Tournament-specific concepts will be covered towards the end. There will be a guest lecture by 2005 WSOP Main Event runner up Steve Dannenmann, whose live tournament winnings exceed \$4 million. The course will culminate with a poker tournament at the instructor's home at the end of intersession.

About the instructor

Avi Rubin, Professor of Computer Science at Johns Hopkins, has been studying and playing poker for over a decade. He has played in the World Series of Poker in Las Vegas every summer since 2014. Rubin's lifetime tournament results include seven first place finishes in casino tournaments with fields larger than 100 players, and a top 30 finish in a World Series of Poker circuit Main Event. He has played in 9 large charity poker tournaments, making the final table 6 times. Rubin's lifetime poker profits in cash games exceed his tournament winnings, including a profitable high-stakes (25-50) cash session in a made for TV table that consisted of seven world class professionals, one a world series main event champion and another a runner up. Rubin also published an article about the security of online poker in *All In* magazine and has a patent on the related technology.

Course Outline:

Part 1 : The basics

- The mechanics of the game
- Hand rankings
- No Limit Hold `em – the rules
- Cash versus Tournaments

Part 2 : Introductory concepts

- Expected value
- Pot Odds calculations
- Express Odds vs. Implied Odds
- Bet types
- Bet sizing
- Position, position, position

Part 3 : Stack sizes

- Effective stacks
- Stack to pot ratios
- Stacks sizes and implied odds
- Stack size consideration in cash games versus tournament

Part 4 : Player types

- Loose vs. Tight
- Aggressive vs. Passive
- Tight, Aggressive play

- Loose, Aggressive play
- Don't play passive – exploit passive players
- Understanding opponents
- Leveling

Part 5 : Basic poker math

- Understanding “outs”
- Probabilities of making a hand
- Poker cruncher simulations
- Hand probabilities against ranges
- Hand domination
- Heuristics, rules of 2 and 4
- Balancing ranges
- Game theory optimal play

Part 6 : Reasons to bet

- Make a worse hand call
- Make a better hand fold
- Deny proper odds for your opponent to draw
- Only bet if you have a reason
- Value bets versus bluffs – know which one you are making

Part 7 : Pre-flop play

- The importance of Position
- Opening hand ranges by position
- Limping and attacking limpers
- 3 betting versus flatting; 4 betting
- Squeeze plays
- Making good laydowns
- Stack size considerations
- Deception
- Playing pairs, premium hands, and suited connectors
- Trouble hands
- Considerations for suited hands
- Narrowing the field and isolation

Part 8 : Post-flop play

- Wet versus dry boards
- Bet sizing on the flop
- Stack considerations
- Playing to the aggressor
- Taking the lead in a hand
- Preflop aggressor out of position
- Preflop Aggressor in position
- Non-aggressor out of position
- Non-aggressor in position
- How to respond to various flops
- Semi-bluffing
- Slow playing
- Multi-way versus head-up pots
- Drawing hands

Part 9 : Playing the turn

- Bet sizing and pot commitment
- Reasons to bet the turn

- Bluffing the turn
- Handling top pair on the turn
- Balancing your play
- Hand reading
- Leverage

Part 10 : Playing the river

- Playing the nuts
- In position versus out of position play
- Plan ahead – what will you do if you bet and are raised?
- Hand reading – how strong is your opponent?
- Should you bluff missed draws?
- Is your opponent bluffing a missed draw?
- Making good laydowns

Part 11 : Important plays

- The first-in bluff
- Squeezing
- Continuation bets
- Bad board bets
- Check-raise bluffs
- Floating
- Double/triple barreling
- Recognizing these plays in others

Part 12 : Tournament Poker

- General tournament structures
- The effect of rising blinds on stack sizes
- Playing the early levels
- Mid-tournament play
- The end game
- Chopping and ICM

Part 13 : Other poker games

- Omaha 8; PLO
- Stud
- Badugi
- Short deck
- Draw poker
- Razz

Part 14 : Misc poker concepts

- Tells: Physical tells and bet sizing tells
- Game selection
- Bankroll management
- Tilt
- Short handed play; Heads up play
- Online play, HUDs and multi-tabling
- “Will you show me if I fold?” and other common ploys