15.S50 - Poker Theory and Analytics

Introduction
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Course Info

- When: MWF 3:30PM – 5:00PM, Jan 3 – Jan 30
  – Additional Review T/R 3:30PM – 5:00PM 4-159
- Instructor: Kevin Desmond
- Faculty Advisor: Paul Mende
- Level: 3 H Units
Course Info

- All course info will be posted online
- Gameplay
- Assignments
  - Three cases
- Lectures
Grading

• Gameplay
  – Cash in one Beginners Only Daily Turbo
  or
  – Play in ten Beginners Only Daily Turbos
• Pass all three cases
• Attend at least 6 of 8 lectures
Gameplay

• The gameplay requirement will be completed in a private online league called MIT Poker Theory and Analytics on PokerStars
PokerStars

Real Money

Play Money

Massachusetts Institute of Technology
Residents of the United States and United States Territories are not permitted to make deposits into their accounts or engage in real-money activity (game play, transfer of funds, or TS trading) from anywhere in the world. They may cash out their balances.

Residents of other nations are not permitted to engage in real-money activity (game play, transfer of funds, or TS trading) while physically located in the United States and United States Territories.

Any attempt to circumvent these restrictions is a breach of the PokerStars Terms of Service. This will lead to your account being closed and your account balance being forfeited.

Click here for further information on PokerStars and the USA.

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I have read and understood this message
PokerStars

Public Games

Home Games
PokerStars MIT League
PokerStars MIT League

Special $5,000,000 GTD Edition of the Sunday Million!

It’s the biggest weekly tournament anywhere online, and for one week only the Sunday Million is having its guarantee boosted to an incredible $5,000,000, including at least $500,000 for the winner.

Buy-in directly for $215, or qualify now for only $1.

Register now

Prize pool: $5,000,000.00
395 places paid
Starts: 14:30 ET Dec 28
In 2 days 14 hours

551 Satellites Available
for as little as $0.88 or 10 FPPs

Register
Tourney Lobby
PokerStars MIT League

![PokerStars MIT League](image-url)

**My Poker Clubs**

<table>
<thead>
<tr>
<th>Club ID</th>
<th>Club Name</th>
<th>Members</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>557832</td>
<td>MIT Poker Theory and Analytics</td>
<td>378</td>
<td>Observer</td>
</tr>
<tr>
<td>606097</td>
<td>PokerSchoolOnline Community</td>
<td>4275</td>
<td>Observer</td>
</tr>
<tr>
<td>174248</td>
<td>PS Pro: fatty's dream4m</td>
<td>4067</td>
<td>Observer</td>
</tr>
<tr>
<td>819773</td>
<td>Showcase: LuvinPoker</td>
<td>1461</td>
<td>Observer</td>
</tr>
<tr>
<td>71252</td>
<td>Showcase: PokerGuru</td>
<td>2908</td>
<td>Observer</td>
</tr>
</tbody>
</table>

*Please login to see private clubs associated with your account.*
PokerStars MIT League

Join a Poker Club - if you have been invited to join a private poker club by an existing club member, please enter the Club ID and Invitation Code below, along with your name or comment. If you have not been invited to join a club yet, consider starting your own Poker Club and inviting your friends to join.

Click here to create your own poker club

Club ID (Number): 557832
Invitation Code: ****************
Your Name: Kevin Desmond

Privacy Note: Your name or comment above will only be seen by the Club Manager to approve your request to join the club. Please enter a name so the Club Manager will recognize you.

Your identity to all club members will be: Desmond_MIT

Home Games Terms & Conditions
I agree to the Terms & Conditions

Join Club  Cancel
PokerStars

• Name Choice
  – Smith/MIT
  – JSmith/MIT
  – JohnSmith/MIT

• Makes it clear who we are playing against

• Avoids getting stuck with embarrassing screen name
  – OMGClayAiken
David Benyamine, Phil "OMGClayAiken" Galfond Biggest Cash Game Winners on Full Tilt in 2008

According to HighStakesDB.com, Benyamine has made over $3.6 million dollars so far in 2008 (as of August 24th, 2008). Phil "OMGClayAiken" Galfond is in second place, nearly a million dollars behind Benyamine, with a total profit of $2.75 million dollars.

PokerStars Hand Histories

PokerStars Hand #125604214357: Tournament #1053508333, 900+100 Hold'em No Limit - Level 1 (20/40) - 2014/11/23 0:11:56 ET
Table '1053508333 9-max seat #1 is the button
Seat 1: gfr047666 (1000 in chips)
Seat 2: xandilino (1000 in chips) is sitting out
Seat 3: Mateyomitrly (1000 in chips) is sitting out
Seat 4: GOOSE BAY Z (1000 in chips)
Seat 5: Bobby2 (1000 in chips)
Seat 6: BonhamReno (1000 in chips)
Seat 7: Herbert Sass (1000 in chips)
Seat 8: john_vh923 (1000 in chips)
Seat 9: Desmond MIT (1000 in chips)
gfr047666: posts the ante 10
xandilino: posts the ante 10
Mateyomitrly: posts the ante 10
GOOSE BAY Z: posts the ante 10
Bobby2: posts the ante 10
BonhamReno: posts the ante 10
Herbert Sass: posts the ante 10
john_vh923: posts the ante 10
Desmond MIT: posts the ante 10
xandilino: posts small blind 20
Mateyomitrly: posts big blind 40
*** HOLES CARDS ***
dealt to Desmond MIT [8c 6c]
GOOSE BAY Z: folds
Bobby2: folds
BonhamReno: folds
Herbert Sass: calls 40
john_vh923: folds
Desmond MIT: folds
gfr047666: raises 280 to 320
xandilino: folds
Mateyomitrly: folds
Herbert Sass: calls 280
*** FLOP *** [Qc 4h 7d]
PokerStars Hand Histories
PokerStars Hand Histories

Settings
- Overview
- Global
- Lobby
- Table Appearance
- Gameplay
- Buy-In / Rebuy
- Playing History
  - Hand History
    - Tournament Summaries
    - BOOM! Hand Sharing
- Layouts
- VIP
- Revert to PokerStars 6

Playing History - Hand History

- Save My Hand History

Where To Save:
C:\Users\Kevin\AppData\Local\PokerStars\HandHistory

- Change Folder
- Open Folder

Keep Hand Histories for: 9999 Days

Language: English

Launch Instant Hand History Panel

OK Cancel Applied
PokerStars MIT League

Goals

– Create a competitive online environment
  • to practice techniques from class in real situations
  • to compete against others playing correctly
  • to collect stats to analyze playing styles

– Earn credit for the course via playing poker
PokerStars MIT League

• Total Points determines prize eligibility (top 15 or so)
• Points per Game (PPG) determines order
PokerStars MIT League

Beginners Tournament Series (Gameplay Requirement)
- 6PM, 8PM, 10PM (Beginners Only) Daily Turbos every day
- Top 20% cashes
- Passing requirements
  - Cash in at least one daily turbo
  or
  - Play in at least 10 daily turbos
- Earns no Tournament Leaderboard (TLB) Points
- Every player must start playing Beginners Turbos
- Players graduate to Prize League after one cash
Tournament League Structure

Beginners League

Start here!

(Beginners Only)
Daily Turbo

Gameplay Credit

Cash in 1 Turbo
or
Play in 10 Turbos

Prize League

Daily Turbo

Weekly Major
PokerStars MIT League

Prize League
- For players with at least one cash in the Beginners League
- Over 100 tournaments scheduled
- Awards 1 TLB point for each registered player
- Top 20% cashes, but this doesn’t count towards anything

Daily Schedule
- 6:00 PM - Daily Turbo (Starting Week 2)
- 7:00 PM - Daily Turbo (Starting Week 2)
- 8:00 PM - Daily Turbo (Starting Week 1)
- 9:00 PM - Daily Hyper-Turbo (Starting Week 2)

Weekly Majors
- Sundays 2pm – Weekly Deepstack Turbo (Real Prizes)
Prize League Sponsors

optiver™ akuna capital™

POKER TRACKER™ Jane Street™

SIG™ CITADEL™ Prismata™

Massachusetts Institute of Technology
League Prizes

• An iPad Mini from Jane Street

• A GoPro from Citadel

• Private coaching from Will Ma

• Kindle Paperwhite and $100 Amazon Gift Card from Prismata

• A customized poker chip set from SIG

• Lots of books donated by Ed Miller, Jon Tannen, Jared Tendler, Verneer, Doug Zare and Andy Bloch
Weekly Majors

Saturday, Jan 10, 2PM – Major Warm-up (TLB Points Only)

Saturday, Jan 17, 2PM – Akuna Major I

Saturday, Jan 24, 2PM – Akuna Major II
Akuna I Prize Pool

Beats Wireless Headphones
Apple TV
Bose Speakers
$300 in Gift Cards
Akuna II Prize Pool

iPad Air
iPad Mini
Beats Wireless Headphones
Apple TV
Bose Speakers
$200 in Gift Cards
Live Optiver Tournament

Saturday Jan 31, 2PM – Optiver Tournament
Optiver Prize Pool

An iPad 4
An iPad Air
An iPad Mini
A PlayStation 4
A Kindle Fire

A GoPro Camera
Bose Speakers
An Apple TV
Beats Headphones
$400 in gift cards
Schedule

• Basic Strategy
• Analysis Techniques and Applications
• Preflop Analysis
• Tournament Play
• Poker Economics
• Game Theory
• Decision Making
Schedule (Guest Speakers)

- Analytical Techniques (Joel Fried)
- Poker Economics (Aaron Brown)
- Game Theory (Bill Chen)
- Decision Making (Matt Hawrilenko)
How to Study

• C – Fundamental Concepts
• P – Practice
• A – Advanced Techniques
Concepts

• Basic framework for decision-making
• Focus on un-exploitable play
• Solid ABC poker
Advanced Techniques

- Deriving decision rules
- Exploitive play
- Metagame concepts
Practice

• Techniques to apply concepts in real-time
• Developing rules of thumb
• Determining sensitivity of decision rules to rounding
• Identifying factors impacting live performance
How to Define Winning

- Cash Games
  - BB/100 hands (online) or BB/Hour (live) [5 BB / 100 or 5 BB / hour]

- Tournaments
  - Return on Investment (ROI) [30% for MTTs, 15% for SnGs]

- General
  - Hourly [$50 - $200/ hour]
Perspective of the Course

- Most of the views are from an online MTT grinder
- Focusing primarily on ROI
  - Some consideration to hourly
- Focus on Live Tournaments
- Prefer conservative, low-variance play
Basic Tools and Concepts

- PokerTracker and Hand Replayer
- Stack, Effective Stack
- Harrington's M Ratio
**PokerTracker**

- Poker analytical software
- Imports PokerStars HHs
- Includes additional poker tools such as Equity Calc, ICM, etc
- Three-month subscription for members of Poker Class
- Install instruction sent via email
**Universal Replayer**

- Poker HH visualizer software
- Reads hand history text files
- Many other features
- Freeware
Universal Replayer
**Stack Size**

- Stack Size = Value of Chips in front of you
- Effective Stack Size = Min (Your Stack, Biggest Stack Still in Play)
- Effective Stack Size = Most amount of chips you can lose in a hand
- We are basically always talking about effective stack
Dan Harrington

- “Action Dan”
- Generally considered solid Tight-Aggressive ABC Player
- Won 1995 WSOP Main Event
- Two WSOP Bracelets
- One WPT Title

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## Temperaments in Poker

<table>
<thead>
<tr>
<th>Solid ABC</th>
<th>Aggressive (Bets Often)</th>
<th>Passive (Bets Infrequently)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tight (Calls Seldom)</td>
<td>TAG</td>
<td>TP “Weak”</td>
</tr>
<tr>
<td>Loose (Calls Often)</td>
<td>LAG</td>
<td>Calling Machine</td>
</tr>
</tbody>
</table>
Dan Harrington


M Ratio

• Invented by Paul Magriel
• Magriel
  – Backgammon theorist
  – Most backgammon tournament wins in the world
  – Commentator for WSOB
  – Eight WSOP final tables
  – Really good at math

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M Ratio

• Harrington’s M Ratio

• $M = \frac{\text{Effective Stack}}{\text{Sum of Blinds and Antes}}$

• In other words, it’s the amount of rounds you can survive until you are blinded out

• And more importantly, it’s the ratio of your stack to the value of stealing the blinds

• A way to normalize the decision making process across different blind levels
Other Harrington Ratios

- Q ratio = Stack size / average player’s stack
- Effective M ratio = M * Number of Players/10