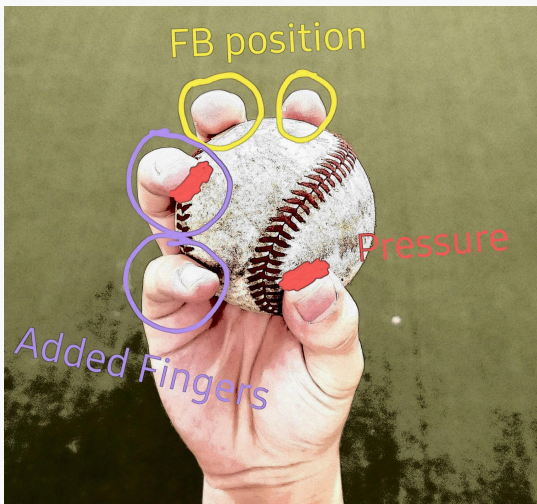


Elements of Pitching: Pitch-Arsenal Design

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Overview

This is an extensive course that encompasses all aspects of pitch-arsenal design, and extends it into 2 directions: towards the 'fundamental' level, and towards the 'leading-edge' of pitcher development.

Students will acquire knowledge and skills that go 'far beyond' the basic levels. At the end of the course, they will have the ability to develop, analyze, and evaluate pitch-arsenals at an exceptional level.

Students Will Learn:

- Physical understanding of 'pitch trajectories' and 'hitter perception';
- The creation of 'pitch effects';
- Classifications of pitch types, and the methodologies to perform/improve them;
- Synergetic applications of 'pitch combinations' and 'locations';
- Evaluation of a pitcher's repertoire, and the role of 'command'

Prerequisites

- None;
- Basic understanding of Pitching Analytics and Pitch Design strongly recommended

Total Content Volume

- 9 Units
- 42 Chapters / 188 Lessons

Estimated Course Duration

- Lecture: 5-10+ hours per week
- Length: 8 weeks

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Curriculum

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Unit 1. Getting Started: 3 Chapters / 8 Lessons

First-Principles Thinking

Pitch Trajectory

- Release Point & Location
- Movement
- Major Force Types

Hitter Reaction Points

- Recognition Point
- Check Point
- Point of No Return
- **Breaking Point**

Unit 2. Creating Effects: 5 Chapters / 17 Lessons

Pitch Effects

- Break
- Timing
- Fooling

Pitch Performance

- **Contrast**
- **Deviation**
- **Functional Pop**

Effective Velocity

- **Mechanism**
- **Break-Induced Effective Velocity**

Approach Angles

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- Concept
- Release Point, Location, Movement Influence
- **Mechanism**
- **True Movement**
- Fastball "Cut"

More On

- **Final Velocity**
- Distribution of Error
- Maximizing Contrast
- Vertical vs. Horizontal Movement

Unit 3. Tunneling: 5 Chapters / 16 Lessons

C.P. Difference

- **Mechanism**
- **Release Point / Location Influence**
- **Movement Influence**

Break & Tunneling

- **Natural Breaking Points**
- More Break for Tunneling
- **Manipulating Location for Tunneling**
- **Manipulating Release Point for Tunneling**
- **Pop**

Tunneling Methods

- **Stopping Ball (1)**
- Diverging Pitches
- Ball Behind Another (1)

Advanced Tunneling Methods

- **Stopping Ball (2, 3, 4)**
- **Ball Behind Another (2)**

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- **Tunneled Location Manipulation**

Deception Mechanisms

- Hiding Ball
- Moving Eyes

Unit 4. Pitch Classification: 8 Chapters / 30 Lessons

Pitch Groups by Effects

- **Breaking - Offspeed Continuum**

- Notable Pitches
- Improving types

Pitch Groups by Trajectory

- **Historical Development of Pitches**

- Fastballs
- Non-Fastballs(**Quadrant Distinctions**)
- Anomalies

Fastballs

- Fourseam Types
- Two-seam Types
- Cut Fastball Types
- **Effects/Functions**

Sliders

- Velocity Continuum
- Movement Continuum
- Composite Examples
- **Effects/Functions**

Curveballs

- Velocity Continuum
- Movement Continuum

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- Composite Examples

- **Effects/Functions**

Changeups/Splitters

- Velocity Continuum
- Movement Continuum
- Composite Examples
- **Effects/Functions**

Screwballs

- Velocity Continuum
- Movement Continuum
- Composite Examples
- **Effects/Functions**

Other Pitches

- Knuckleball
- Eephus
- Rising Curveball

Unit 5. Creating Movement: 4 Chapters / 26 Lessons

Magnus Force

- Mechanism
- Transverse/Gyro Spin
- Trajectory

Seam-Shifted Wake Force

- Mechanism
- Force Direction
- Trajectory
- **Uses**
- Looper Orientation
- Discoball Orientation

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- **1-Seam Gyroball Orientation**

- Measuring SSW

Producing the Right Spin

- **Axis Tilt**
- **Fastball Spin**
- **Gyro Tilt vs. Wrist Angle**
- **Big Hand**
- **Small Hand**
- +/- Slider Efficiency
- 3D Axis Tilt & Velocity
- Changeup Axis Tilt
- Curveball Spin
- Almost Every Fastball is Cut

How To Throw Every Pitch

- Fastballs
- Sliders
- Curveballs
- Changeups
- Screwballs

Unit 6. Arsenal Design: 5 Chapters / 23 Lessons

Pitch Functions

- Big 4(Contact, Chase, Offspeed, Freeze)
- Platoon Splits
- Movement Directions
- **Intentions**

Individual Pitch Quality

- **Performance on its own**
- **Performance off of another**

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- Opposing hitter factor
- Importance of Velocity & Movement
- Averages
- **True Movement**
- Outliers
- Be Unique
- Deviation

Arsenal as a Whole

- **Versatility**
- **Specificity**
- **Volume**

Aggregate Arsenal Score

- Stuff+
- Command+
- **Comprehensive Scoring**

Objective, Revisited

- Pitch Outcomes
- Function Result Evaluation
- The Goal in Designing an Arsenal
- **Ranking AAS Variables**

Unit 7. The Art of Locations: 4 Chapters / 25 Lessons

Zone Classifications

- Simplified Zones
- **Specific Function-Based Model**

Specific Zones(Locations)

- Middle
- Quadrant
- Edge

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- Up/Down
- Elevate & Dirt
- Chase Down & Chase Out

Standard Pitch Locations

- Hitter Zone Coverage
- Tom Tango's Location Run Values
- Fourseam Pairs
- Two-seam Pairs
- Cutter-Slider
- Effects-based
- True Offspeeds

Advanced Locations

- Sinker-Cutter (In-Out Game)
- Cutter-Changeup (In-Out Game)
- **Runner-Breaking Cutter**
- **Moving FB-Offspeed**
- **Hard Breaking Balls**
- **Breaking Offspeeds**
- **Setup Curveball & Fourseam**
- **High Breaking Balls**
- **Up&In Cutters/Sinkers**
- **Low Fourseamers**

Unit 8. Synergy: 4 Chapters / 20 Lessons

Standard Pitch Combinations

- Maximal Break
- Change of Pace
- **Vertical Hybrid**
- Get-Me-Over Curveball
- Horizontal Sinking Contrast

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- Maximal Pop

Advanced Combinations

- Equalizing Horizontal Movement
- **Fourseamer as a Secondary**
- **Moving Fastballs**
- Spin Mirroring
- Count-Dependent Pitch Modification
- **Layered Freeze Pitches**
- Parallel Margin of Error
- **Perpendicular Margin of Error**

Effective Patterns

- **Fastball - Offspeed Slider Pattern**
- **Vertical 3-Pitch Combination**
- Trevor Bauer 3-Pitch Sequence
- **Shane Bieber 3-Pitch Sequence**

Command Dependence

- **Individual Pitches**
- **Pitch Combos**

Unit 9. Putting Things Together: 4 Chapters / 24 Lessons

Setting Priorities

- Ball Control
- Striking Out
- Avoiding Quality Contact
- Amateur Arsenal Design

Optimizing Pitch Movement

- Supinated Wrist Solution
- Pronated Wrist Solution

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- Stiff Wrist Solution
- **Low Spin Rate Solution**
- **Forearm Rotation Protocol**
- **Armside vs. Gloveside**

Arsenal Design for Specific Pitcher Types

- **Starting Pitcher vs. Relief Pitcher**
- Over-the-top Arm Slot
- High 3/4 Arm Slot
- Low Arm Slot
- Normal Arm Slot
- Low-Velocity Solution

MLB Case Studies

- Clayton Kershaw
- Kyle Hendricks
- Max Scherzer
- Chris Sale
- Blake Snell
- Ryu Hyun-Jin
- Sawamura Hirokazu
- Corbin Burnes