Unit 1: Design & Documentation
Unit 1 Vocabulary
Unit 1 Concepts
Unit 1 Performance Objectives
1.1 - What is Engineering?
1.2 - Engineering Design
1.3 - The Design Process
1.4 - Importance of Documentation
1.5 - Working in Teams
1.6 - Effective Team Practices
1.7 - Quantitative vs. Qualitative Arguments
1.8 - Engineering Notebooks
1.9 - Software and Tools for Drone Design
Unit 1 Summary

Unit 2: Safety Considerations
Unit 2 Vocabulary
Unit 2 Concepts
Unit 2 Performance Objectives
2.1 - Safety First
2.2 - Your Safety Responsibility
2.3 - Establishing a Safety Culture
2.4 - Workshop Safety Issues
2.5 - Workshop Safety Rules
2.6 - Soldering Safety Rules
2.7 - Increase Your Drone Design Knowledge
2.8 - Increase Your Flight Skills
2.9 - Flight Safety Organizations
2.10 - Educational Regulations
2.11 - Drone Registration
2.12 - Definition of Recreational Use
2.13 - Safety Guidelines for sUAS Recreational Users
2.14 - Privacy Policy
2.15 - Safe Flying Locations
2.16 - No-Fly Zones
2.17 - Safe Weather Conditions
2.18 - Safe Flight Clearance
2.19 - Visual Line of Sight
2.20 - Start Out Slowly
2.21 - Ground Effect & Prop Wash
2.22 - Propeller Dangers
2.23 - Pre-Flight Inspection
Unit 2 Summary

Unit 3: Introduction to Drones
Unit 3 Vocabulary
Unit 3 Concepts
Unit 3 Performance Objectives
3.1 - What is a Drone?
3.2 - Drone Uses Besides Aerial
3.3 - Brief History of Aerial Drones
3.4 - Drone Reputation
3.5 - Development of Small UAVs
3.6 - What’s in a Name?
3.7 - Types of Small UAVs (sUAV)
3.8 - Choosing a Multicopter Configuration
3.9 - Drone Components
3.10 - Current Uses and Future Potential
Unit 3 Summary

Unit 4: Fundamentals of Flight
Unit 4 Vocabulary
Unit 4 Concepts
Unit 4 Performance Objectives
4.1 - What is Aerodynamics?
4.2 - Brief History of Flight
4.3 - Newton’s Laws of Force and Motion
4.4 - Bernoulli’s Principle
4.5 - Airfoils
4.6 - Four Forces of Flight
4.7 - Mechanical Design of an Airplane
4.8 - Three Axes of Flight
4.9 - Airspace
4.10 - Traffic Patterns and Minimum Safe Altitudes
4.11 - Weather Factors for Drone Flight
4.13 - How Multicopters Fly
4.14 - Vectors Applied to Flight Physics
4.15 - Calculating Values of Combined Maneuvers
Unit 4 Summary
Unit 5: Airframes
Unit 5 Vocabulary
Unit 5 Concepts
Unit 5 Performance Objectives
5.1 – Airframe Characteristic
5.2 – History of Helicopter Design
5.3 – Early Multirotor Aircraft Design
5.4 – Advancements in Control and Design
5.5 – Multirotor Configurations
5.6 – Choosing/Building a Multicopter Configuration
5.7 – Airframe Sizes
5.8 – Airframe Materials
5.9 – Tensile Strength
Unit 5 Summary

Unit 6: Electric Motors
Unit 6 Vocabulary
Unit 6 Concepts
Unit 6 Performance Objectives
6.1 – Introduction to Electric Motors
6.2 – Brief History of the Electric Motor
6.3 – AC/DC Motor Differences
6.4 – Brushed vs. Brushless DC Motors
6.5 – Classification of Load Capability (Kv rating)
6.6 – Calculation of Motor Ratings
6.7 – Choosing the Best Motors for Your Needs
6.8 – Sample Build for Determining Motors
Unit 6 Summary

Unit 7: Propellers
Unit 7 Vocabulary
Unit 7 Concepts
Unit 7 Performance Objectives
7.1 – Introduction to Propellers
7.2 – History of Propeller Design
7.3 – Propeller Design Theory
7.4 – Fixed Pitch, Variable-Pitch, and Constant Speed Blades
7.5 – Size, Pitch, Direction, and Blade-count
7.6 – Safety and Use of Prop Guards
7.7 – Balancing Your Propellers
7.8 – Materials Used in Prop Construction
7.9 – Choosing Your Propellers
7.10 – Using eCalc® to Determine Best Prop Selection
Unit 7 Summary

Unit 8: Electronic Speed Controllers (ESCs)
Unit 8 Vocabulary
Unit 8 Concepts
Unit 8 Performance Objectives
8.1 – Introduction to ESCs
8.2 – How ESCs Work
8.3 – ESC Ratings: Amperage and Voltage
8.4 – Calibrating and Programming ESCs
8.5 – Firmware Options (SimonK / BLHeli)
8.6 – A Few More Considerations
8.7 – Mounting Your ESCs
Unit 8 Summary
Unit 9: Flight Controllers
Unit 9 Vocabulary
Unit 9 Concepts
Unit 9 Performance Objectives
9.1 – Introduction to Flight Controllers
9.2 – How They Work
9.3 – Sensors and Guidance Systems
9.4 – Autonomous Flight
9.5 – Sense-and-Avoid Technology
9.6 – Determining Your Flying Purpose
9.7 – Comparing Flight Controllers
9.8 – Open Source vs. Closed Source
Unit 9 Summary

Unit 10: Batteries, Chargers, & Connectors
Unit 10 Vocabulary
Unit 10 Concepts
Unit 10 Performance Objectives
10.1 – Batteries Defined
10.2 – A Brief History of Batteries
10.3 – Anatomy of a Battery
10.4 – Battery Reactions and Chemistry
10.5 – Battery Purposes
10.6 – Battery Arrangement and Power
10.7 – Rechargeable Batteries
10.8 – LiPo Batteries: The Power of Choice for Drones
10.9 – LiPo Battery Characteristics
10.10 – LiPo Cell Balancing
10.11 – LiPo Chargers
10.12 – LiPo Bags
10.13 – Keeping Tabs on your Battery’s Health
10.14 – Connectors
Unit 10 Summary

Unit 11: Transmitters & Receivers
Unit 11 Vocabulary
Unit 11 Concepts
Unit 11 Performance Objectives
11.1 – What is a Radio Control System?
11.2 – History of Radio Control
11.3 – Controllers / Transmitters
11.4 – Receivers
11.5 – Most Common Frequency Bands
11.6 – Control Station Setup and Programming
Unit 11 Summary

Unit 12: Cameras, Gimbals & Other Payloads
Unit 12 Vocabulary
Unit 12 Concepts
Unit 12 Performance Objectives
12.1 – Payload Considerations
12.2 – Camera Options
12.3 – Camera Resolution
12.4 – Camera Sensors
12.5 – Still Photography
12.6 – Video Photography
12.7 – Live Video Output
12.8 – Vibration Isolation, Prop Balancing, and Jello Effect
12.9 – Gimbals
12.10 – Camera Lenses
12.11 – Exposure Settings
12.12 – Video Frame Rate
12.13 – Saving Digital Files (RAW, DNG, JPEG, H.264, MP4, MOV)
12.14 – Delivery Payloads and Other Possibilities
Unit 12 Summary
**Unit 13: Ground Control Stations & FPV**
- Unit 13 Vocabulary
- Unit 13 Concepts
- Unit 13 Performance Objectives
  - 13.1 – What is a Ground Control Station?
  - 13.2 – Telemetry
  - 13.3 – History of Telemetry
  - 13.4 – Data Tracking
  - 13.5 – Mission Planning
  - 13.6 – 3D Mapping and Modeling
  - 13.7 – FPV and Drone Racing
- Unit 13 Summary

**Unit 14: Regulations & The FAA**
- Unit 14 Vocabulary
- Unit 14 Concepts
- Unit 14 Performance Objectives
  - 14.1 – The Need to Regulate Airspace
  - 14.2 – The NTSB (National Transportation Safety Board)
  - 14.3 – The FAA (Federal Aviation Administration)
  - 14.4 – UAS Incidents and FAA Response
  - 14.5 – Regulation of UAS Operations
  - 14.6 – Recreational Use of Drones
  - 14.7 – sUAS Registration
  - 14.8 – Section 333 Exemptions
  - 14.9 – Summary of Small Unmanned Aircraft Rule (Part 107)
  - 14.10 – Future Challenges for Regulation
- Unit 14 Summary

**Unit 15: Drone Maintenance & Battery Care**
- Unit 15 Vocabulary
- Unit 15 Concepts
- Unit 15 Performance Objectives
  - 15.1 – The Commonality of Drones
  - 15.2 – Drone Maintenance not FAA-Required, but ...
  - 15.3 – Create a Pre-Flight Checklist
  - 15.4 - Software and Firmware Maintenance
  - 15.5 – Logging Your Flights
  - 15.6 – Documenting Your Logs
  - 15.7 LiPo Battery Maintenance and Care
  - 15.8 LiPo Chargers Revisited
  - 15.9 – Use of LiPo Bags
  - 15.10 – Charging Temperatures
  - 15.11 – Charging Rates
  - 15.12 – Discharging Rates
  - 15.13 – Working Temperatures
  - 15.14 – Battery Puffing
  - 15.15 – “Breaking-in” New LiPo Batteries
  - 15.16 – Handling Damaged LiPo Batteries
  - 15.17 – Storage and Shelf-Life of your LiPo Battery
  - 15.18 – The 80% Rule: Retiring LiPo Batteries
  - 15.19 – Disposal of LiPo Batteries
- Unit 15 Summary

**Unit 16: Efficiency vs. Performance**
- Unit 16 Vocabulary
- Unit 16 Concepts
- Unit 16 Performance Objectives
  - 16.1 – Efficiency “OR” Performance
  - 16.2 – Designing for Purpose
  - 16.3 – Configuration Considerations
  - 16.4 – Efficiency in Propellers
  - 16.5 – Efficiency in Motors and Electronics
  - 16.6 – Motor/Prop Combinations
  - 16.7 – Build or Buy?
- Unit 16 Summary
CURRICULUM TIMELINE

This curriculum is extremely thorough while allowing for flexibility. The instructor has the option to teach the entire curriculum and have the students complete all the activities, or the instructor can pick, choose, and/or skip any of the activities or quizzes. Instructors may also decide to include projects of their own. Below is a suggested timeline showing minimum and maximum days for each Unit.

(1 day = 60-minute class)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
<th>Minimum # days (if some activities are skipped)</th>
<th>Maximum # days (if all activities completed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design &amp; Documentation</td>
<td>Introduces the engineering design process and stresses the importance of cooperation, teamwork, and documentation to solve problems.</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Safety Considerations</td>
<td>Stresses the importance of adopting a “safety attitude” when building and flying a drone. Covers workshop safety and outdoor flying.</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Introduction to Drones</td>
<td>Covers nomenclature, history of aerial drones, reputation, airframe, configurations, basic components, and current/future uses of drones.</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Fundamentals of Flight</td>
<td>Introduces aerodynamics, history of flight, Newton’s Laws of Motion, Bernoulli’s Principle, four forces of flight, three axes of flight, how they apply to drone flight. Reveals issues aircraft pilots encounter including airspace, traffic patterns, and safe altitudes.</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Airframes</td>
<td>Covers history of helicopter design, early multirotor design, various configurations, airframe sizes, and construction materials.</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Electric Motors</td>
<td>Discusses AC/DC motor differences, history of electric motors, brushed vs. brushless motors, Kv ratings, and calculation of motor capabilities for a drone build.</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Propellers</td>
<td>Covers history of propeller design, fixed-pitch and constant speed blades, airfoil design, size, pitch, and blade-count. Includes balancing tips and construction materials.</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Electronic Speeds Controllers (ESCs)</td>
<td>Introduces role of ESCs, how they work, PWM, PPM, amperage and voltage ratings, ESC calibration, SimonK vs. BLHeli firmware options and BEC, OPTO, and UBEC.</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Flight Controllers</td>
<td>Introduces role of flight controllers, how they work, introduces sensors, sense-and-avoid technology, GPS, open source vs. closed source programming, and compares current FCs on the market.</td>
<td>3</td>
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<tr>
<td>10</td>
<td>Batteries, Chargers &amp; Connectors</td>
<td>Covers history of batteries, various makeups, reactions and chemistry, parallel vs. serial arrangements, rechargeable batteries, LiPo battery characteristics, charging, cell balancing, and various connectors.</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>Transmitters &amp; Receivers</td>
<td>Introduces history of radio control systems, controllers, transmitters, and receivers, frequency bands, and programming transmitters.</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>Cameras, Gimbs &amp; Other Payloads</td>
<td>Covers payload considerations, camera options, resolution, still photography, video photography, vibration and jello™ effect, exposure settings, camera lenses, video frame rate, image files, delivery payloads, and other payload possibilities.</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>Ground Control Stations &amp; FPV</td>
<td>Introduces telemetry, data tracking, mission planning, and 3D mapping and modeling. Covers first-person-view flying safety and drone racing options.</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>Regulations &amp; The FAA</td>
<td>Covers role of the FAA and NTSB. Stresses importance of regulation, and lists registration and recreational use of drones. Section 333 Exemptions and Part 107 Rules are explained.</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Drone Maintenance &amp; Battery Care</td>
<td>Emphasizes importance of pre-flight checklists and logging flights. Stresses safety when using LiPo batteries including proper charging methods, discharging, handling, and disposal.</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>Efficiency vs. Performance</td>
<td>Revisits concepts that influence efficiency and performance in drone builds. Covers configurations, efficiency in propellers and motors. Discusses building or buying a drone.</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTALS:** 50 84
Materials List for Team Challenges

1.2 Activity
Team Design Challenge – Air-propelled Mars Rover
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (4) Blank CDs or (4) Bottle caps (model S-18110 on uline.com)
- (2) 9-inch Latex balloons
- (6) Plastic drinking straws
- (1) 16-oz paper/plastic drinking cup (e.g. Solo™ or Dixie™)
- Small dry sponge
- (4) Wooden Barbecue skewers or chopsticks
- (4) Small rubber bands
- 22” x 28 Sheet poster board
- (6) 8.5” x 11” Sheets of regular paper
- (6) Jumbo paper clips
- Roll masking tape
- (4) Small marbles
- Scissors (allowed as a tool only, not a construction material)

1.3 Activity
Team Design Challenge – Mars Tower
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (20) Plastic drinking straws
- (30) Popsicle sticks
- (30) Pipe cleaners
- (10) Small brass fasteners
- (1) 16-oz paper/plastic drinking cup (e.g. Solo™ or Dixie™)
- (4) Small marbles
- Roll masking tape
- (4) Small rubber bands
- 22” x 28 Sheet poster board
- (6) 8.5” x 11” Sheets of regular paper
- (6) Jumbo paper clips
- (4) Wooden Barbecue skewers or chopsticks
- Roll masking tape
- (4) Wooden Barbecue skewers or chopsticks
- (4) Small rubber bands
- Roll masking tape
- Scissors (allowed as a tool only, not a construction material)

1.4 Activity
Team Design Challenge – Mars Zip Line
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (6) Plastic drinking straws
- (6) Small 3-oz drinking cups
- (6) Jumbo paper clips
- (2) Wooden barbeque skewers
- (4) Small marbles
- Roll masking tape
- Scissors (allowed as a tool only, not a construction material)

2.4 Activity
Team Design Challenge – Anything Goes!
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (10) Plastic drinking straws
- (2) 16-oz paper/plastic drinking cup (e.g. Solo™ or Dixie™)
- (4) Small 3-oz drinking cups
- (2) 9-inch Latex balloons
- (8) Small rubber bands
- 22” x 28 Sheet poster board
- (6) 8.5” x 11” Sheets of regular paper
- (10) Popsicle sticks
- (20) Pipe cleaners
- (4) Small brass fasteners
- (6) Jumbo paper clips
- (4) Wooden Barbecue skewers or chopsticks
- Roll masking tape
- Scissors (allowed as a tool only, not a construction material)

4.2 Activity
Team Design Challenge – Nepali Food Glider
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- 20” x 30” foam board (e.g. - https://www.amazon.com/Elmers-900802-Board-White-Surface/dp/B000ZPOCPY)
- Roll masking tape
- (6) Jumbo paper clips
- (10) small rubber bands
- Modeling clay (approx. %2F block or 2-oz.) (e.g. - https://www.amazon.com/Prang-Modeling-Colored-Blocks-00740/dp/B001AYYBEG)
- U.S. pennies (to represent the food payload)
- X-ACTO® knife (preferred) or scissors (allowed as a tool only, not a construction material)
6.2 Activity
Team Design Challenge – Motor Construction, Re-design, and Conclusions

Materials:
Working as teams of 2, each team needs the following items to be used for their design:
- Ceramic Magnet [https://www.sciplus.com/p/BAR-MAGNETS_51248]
- Jumbo Paper Clips
- Thumbtacks
- (1) 9-Volt Battery
- Battery Snap w/leads
- 6” x 4” cardboard or wood block for base
- Roll masking Tape
- Pair of scissors
- Voltage meter/Multimeter.

7.2 Activity
Team Design Challenge – Bamboo-copter Design

Materials:
Working individually, each student needs the following items to be used for their design:
- 22” x 14” Sheet poster board (a 22” x 28” sheet cut in half)
- (4) Wooden Barbeque skewers or chopsticks
- Elmer’s glue for attaching the propellers.
- Scissors (allowed as a tool only, not a construction material) or X-acto knife.

8.2 Activity
Team Design Challenge – Oxygen-absorbing Globe Launcher

Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (20) Popsicle sticks
- (8) Medium rubber bands
- (2) Small paper cups
- (4) Wooden Barbeque skewers or chopsticks
- (4) Jumbo paper clips
- (6) Large index cards
- Roll masking tape
- Ping pong ball
- Scissors (allowed as a tool only, not a construction material)

8.4 Activity
Team Design Challenge – Mars Cable Car Transport

Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (6) 9-inch Latex balloons
- (6) Plastic drinking straws
- (1) 16-oz paper/plastic drinking cup (e.g. Solo™ or Dixie™)
- (2) Small drinking cups
- (4) Wooden Barbeque skewers or chopsticks
- (4) Small rubber bands
- 22” x 14” Sheet poster board
- (6) Jumbo paper clips
- Roll masking tape
- Scissors (allowed as a tool only, not a construction material)

10.1 Activity
Battery Construction, Measurements, and Conclusions

Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- Unopened can of “dark” soda (Coca-Cola Classic or Pepsi Regular – not diet!)
- Unopened can of “clear” soda (Mountain Dew Regular or 7-Up Regular – not diet!)
- Unopened can of root beer (Barq’s™ Regular or A&W™ Regular – not diet!)
- Plastic or non-metallic cups (8 ounces).
- 3/4-inch-wide copper strips which are slightly longer than the height of the cup. (Available at a local craft store or here: http://www.hobbylinc.com/htm/k+s/k+s6525.htm)
- 3/4-inch-wide aluminum strips which are slightly longer than the height of the cup. (Available at a local craft store or here: http://www.hobbylinc.com/htm/k+s/k+s255.htm)
- Note: Do not use aluminum foil ... it is not effective for this experiment.
- Measuring cup.
- Pair of scissors to cut the metal into strips if needed.
- Voltage meter/Multimeter.
- Electrical lead wires with alligator clips at both ends (Available at a local electronics store or here: http://www.amazon.com/SE-TL10-10-Piece-Alligator-Clips/dp/B0002KRABU).
10.2 Activity
Battery Construction, Measurements, and Conclusions
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (2) Ice cube trays (plastic, not metal) capable of holding 14 ice cubes.
- (28) Zinc- or nickel-coated (Galvanized) or aluminum bolts approximately 1-inch in length. 14 needed for each battery. (Do not use copper screws).
- (Approx. 6 ft.) Copper wire stripped of insulation and cut into 3-inch lengths (an old extension cord will work).
- Jar of dry dirt/soil from outside (Earth).
- Jar of white distilled vinegar.
- Pair of scissors to cut the wire as needed.
- Teaspoon for measuring.
- Voltage meter/Multi-meter.
- (4) Electrical lead wires with alligator clips at both ends (Available at a local electronics store or here: http://www.amazon.com/SE-TL10-10-Piece-Alligator-Clips/dp/B0002KRABU).

13.2 Activity
Team Design Challenge – Firefighting Drone Device
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- 6-feet of fishing line (allow more if requested by the team).
- 22” x 14” Sheet poster board (a 22” x 28” sheet cut in half).
- (20) Popsicle sticks
- (4) Wooden Barbeque skewers or chopsticks.
- (4) Small paper cups.
- (6) Jumbo paper clips
- (6) Rubber bands
- (10) Plastic drinking straws
- (10) Large index cards
- Roll masking tape
- Elmer’s glue.
- Scissors (allowed as a tool only, not a construction material)
- (1) “mystery item” from home.

11.2 Activity
Team Design Challenge – Nepali Delivery Rockets
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- (20) Popsicle sticks
- (4) 9-inch Latex balloons
- (6) Plastic drinking straws
- (4) small paper/plastic drinking cups
- (4) Wooden Barbeque skewers or chopsticks
- (10) Small rubber bands
- 22” x 14” Sheet poster board (22” x 28” cut in half)
- (6) 8.5” x 11” Sheets of regular paper
- (6) Jumbo paper clips
- Elmer’s white glue
- Roll masking tape
- (5) Small marbles
- Scissors (allowed as a tool only, not a construction material)

15.2 Activity
Team Design Challenge – Ping Pong Ball Golf
Materials:
Working as teams of 3-4, each team needs the following items to be used for their design:
- Ping Pong Ball
- 22” x 14” Sheet poster board (a 22” x 28” sheet cut in half).
- (20) Popsicle sticks
- (4) Wooden Barbeque skewers or chopsticks.
- (4) Small paper cups.
- (6) Jumbo paper clips
- (6) Rubber bands
- (4) 9-inch balloons
- (10) Plastic drinking straws
- (10) Large index cards
- Roll masking tape
- (10) Pipe cleaners
- (4) Plastic spoons
- Scissors (allowed as a tool only, not a construction material)
- (1) “mystery item” from home.
### MATERIALS

<table>
<thead>
<tr>
<th>Activity</th>
<th>Blank CDs or Bottle Caps</th>
<th>9&quot; Latex Balloons</th>
<th>Plastic Drinking Straws</th>
<th>16-oz Paper or Plastic Drinking Cup</th>
<th>Small 3-oz Drinking Cups</th>
<th>Small Dry Sponge</th>
<th>Wooden BBQ Skewers or Chopsticks</th>
<th>Small Rubber Bands</th>
<th>Poster Board (22x28)</th>
<th>Reg. Paper (8.5x11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
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