Cool Name Pending

FIRST LEGO League (FLL)

16-Week Deep Curriculum Guide

Complete Mentor-Led Academy Framework

Week 1: Team Formation & Robot Introduction

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on robot hardware basics and motor functions. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on problem identification brainstorming. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 2: Movement Accuracy Training

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on straight drive and turning precision. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on theme research. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 3: Sensors Introduction

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on color and distance sensor integration. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on research validation. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 4: Gyro Fundamentals

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on gyro straight driving. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on expert outreach planning. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 5: Mission Strategy Analysis

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on scoring prioritization. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on problem narrowing. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 6: Attachment Engineering

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on modular design principles. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on solution brainstorming. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 7: Iterative Testing

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on test-run documentation. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on prototype sketching. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 8: Mid-Season Evaluation

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on robot consistency analysis. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on solution refinement. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 9: Advanced Programming I

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on loops and conditionals. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on solution feasibility testing. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 10: Advanced Programming II

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on MyBlocks and optimization. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on prototype model building. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 11: Efficiency Improvement

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on timing reduction techniques. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on presentation structuring. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 12: Full Mission Runs

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on complete field strategy testing. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on visual aids preparation. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 13: Judging Preparation I

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on robot design explanation. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on presentation scripting. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 14: Judging Preparation II

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on Q&A; practice. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on mock presentations. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 15: Competition Simulation

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on timed runs under pressure. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on full presentation rehearsal. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.

Week 16: Final Review & Confidence Building

Learning Objectives:

- Develop structured understanding of weekly focus area.
- Strengthen teamwork and communication.
- Document engineering and research progress.
- Build measurable improvement in robot consistency.

Technical Training Content:

This week focuses on performance stabilization. Mentors should provide concept explanation, live demonstration, and guided student practice. Encourage experimentation and structured testing.

Innovation Project Development:

This week the team works on confidence building exercises. Students should document research findings, assign responsibilities, and prepare small presentation updates.

2-Hour Session Breakdown:

- 15 min – Core Values activity and reflection
- 35 min – Robot build or improvement
- 40 min – Programming & test runs
- 20 min – Innovation research/presentation work
- 10 min – Documentation and reflection

Homework / Practice Assignment:

Students document engineering log entries, reflect on challenges, and prepare improvement ideas for next session.