

The Guided Mission 2021-22

Coach your team through a real FIRST LEGO League mission and prepare them for the challenges to come!

🕒 45–90 min. 📦 Beginner 🎓 Grades 6–8



Teacher Support

Key objectives

Students will:

- Complete their first *FIRST*® ^ ^ LEGO® ^ ^ League mission
- Have their robot interact with the game field

Things you will need

LEGO® Education SPIKE™ Prime Set
FIRST® LEGO® League Challenge Set

Lesson Plan

1. Prepare

- Read through the student material in the LEGO® Education SPIKE™ App.
- To complete this lesson, your students should build the Driving Base with Color Sensor.

2. Engage (10 Min.)

- Use the ideas in the *Ignite a Discussion* section below to engage your students in a discussion related to this lesson.
- Use the video to explain the lesson.

3. Explore (30 Min.)

- Ask them to set up the Guided Mission model on the game field.
- Have them follow the instructions to write a program to drive their robot to the model and activate it.

4. Explain (10 Min.)

- Facilitate a discussion about the key functionalities of the robot in triggering the model to release the package.

5. Elaborate (40 Min.)

- Have each team practice lining up their robot and sending it on a mission to activate the model.
- Ask whether they've noticed anything to be especially aware of during this mission (i.e., it's over the far side of the field, it passes other missions on the way).
- Prompt a discussion about what they've learned about following lines that could help them in accessing other missions.
- Don't forget to leave some time for cleanup.

6. Evaluate

- Give feedback on each student's performance.
 - You can use the assessment rubrics provided to simplify the process.
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Ignite a Discussion

Use these questions to engage your students in a discussion about how they can use what they've learned so far to successfully complete this mission:

- What's the robot doing?
- How does the robot reach the model?
- How does the robot activate the model?
- What's the ideal balance between speed and accuracy for this mission?

Have your students watch the video to see what they're about to do.

Building Tips

Setting Up the Guided Mission Model

Share these tips with your students as they're setting up the model:

- Check the Robot Game Rulebook for the correct position of the model on the mat.
 - Make sure the model is built correctly and operates as it should.
 - Carefully apply the Dual Lock and correctly position the model on the mat.
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Coding Tips

Main Program

Differentiation

Simplify this lesson by:

- Focusing on the robot's accuracy in following the line to reach the mission.
- Solving one part of the mission with your students as a group.

Take this lesson to the next level by:

- Challenging your students to follow other lines on the game field.
 - Assigning another one of this year's FIRST LEGO League challenges to be done before or after this mission.
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Assessment Opportunities

Teacher Observation Checklist

Create a scale that matches your needs, for example:

1. Partially accomplished
2. Fully accomplished
3. Overachieved

Use the following success criteria to evaluate your students' progress:

- Students worked well as a team to complete the mission.
- Students worked together as a team to complete more missions in the same run.
- Students can present their robot, program, and mission strategy, explaining how they've successfully completed each mission.

Self-Assessment

Have each student choose the brick that they feel best represents their performance

- Have each student choose the brick that they feel best represents their performance.
- Blue: I've successfully completed one mission.
- Yellow: I've successfully completed more than one mission.
- Violet: Along with my team, I've presented our robot, program, and mission strategy to our coach with each team member participating.

Peer-Assessment

Encourage your students to provide feedback to others by:

- Having one student score the performance of another using the colored brick scale above
 - Asking them to present constructive feedback to each other so that they can improve their group's performance during the next lesson
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Language Arts Extension

To integrate language arts skills development:

- Have your students prepare and deliver a presentation about how they developed an effective strategy for completing the mission in the shortest amount of time.

Note: This will make for a longer lesson.

Career Links

Students who enjoyed this lesson might be interested in exploring these career pathways:

- Manufacturing and Engineering (Pre-Engineering)
- Information Technology (Computer Programming)