

SAINTS GLOBAL
LEADER GUIDE

ROBOTICS

INTELLECTUAL CORE

Version 2026.1





PURPOSE & IDENTITY

SKILL BADGE PURPOSE

This skill badge is designed to help saints develop essential skills in robotics. Through structured learning and hands-on activities, participants will gain practical experience and deepen their understanding of key concepts.

DEVELOPMENT CORE: INTELLECTUAL

This badge develops intellectual attributes through focused activities and reflection. Saints will grow in this area while building practical skills.

CORE FOCUSES

- Understanding fundamental concepts and principles
- Developing practical application skills
- Building confidence through hands-on experience
- Connecting learning to daily life

TIME COMMITMENT

4-6 weeks (suggested)

RECOMMENDED AGE

12+ years



SAFETY CONSIDERATIONS

SUPERVISION

Ensure appropriate adult supervision for all activities following Saints Global guidelines. Never leave youth unsupervised during badge activities.

PRIVACY

Respect personal experiences and information shared during activities. Maintain confidentiality and help youth understand appropriate boundaries.

ENVIRONMENTAL SAFETY

Assess outdoor locations and weather conditions before activities. Ensure proper shelter, hydration, and protection from hazards appropriate to the environment.

FIRST AID

Maintain a first aid kit and ensure at least one leader is trained in basic first aid. Know the location of the nearest medical facility and have emergency contact information readily available.

EMERGENCY CONTACTS

Troopmaster:

Emergency:



THE DPAR METHOD

Saints Global uses the DPAR method for skill badge completion. As a leader, you should practice DPAR yourself when preparing to teach.

D

DISCOVER

Learn foundational knowledge and concepts. Research, study, and explore the topic.

YOUR ROLE AS LEADER:

- Immerse yourself in the material before teaching
- Study each requirement—understand what AND why
- Anticipate questions saints might ask

P

PLAN

Create a personal action plan with goals and timeline.

YOUR ROLE AS LEADER:

- Design your teaching approach for each requirement
- Gather materials and prepare discussion questions
- Consider how to adapt for different learning styles

A

ACT

Execute through hands-on practice with leader guidance.

YOUR ROLE AS LEADER:

- Shift from teacher to guide—step back
- Create safe space for practice and mistakes
- Model the skills yourself when helpful

R

REFLECT

Review what was learned and share experiences gained.

YOUR ROLE AS LEADER:

- Facilitate meaningful conversations
- Ask open-ended questions, listen more than speak
- Celebrate growth and help saints see their progress



STEP 1: DISCOVER

LEADER PREPARATION

- ☐ Review all DISCOVER requirements thoroughly
- ☐ Gather necessary resources and materials
- ☐ Prepare discussion questions and activities
- ☐ Identify potential challenges saints may face

STEP 1: DISCOVER — TEACHING GUIDE

Requirement 1a: Explain common hazards in robotics work (tools, electricity, heat, moving parts) and how to prevent and respond to them, including proper safety gear.

HOW TO TEACH

- Walk the workspace and name hazards by station (cutting tools, soldering iron, moving parts, electrical)
- Use a scenario (cut, burn, eye injury, pinch) and rank the first three responses
- Have the Saint demonstrate proper safety gear and tool handling
- Reinforce that robotics injuries happen to attentive people who skip one step

Completion: Saint explains common robotics hazards and how to prevent and respond to each, including proper safety gear.

Requirement 1b: Explain first aid and prevention for robotics-related injuries such as cuts, burns, and eye injuries.

HOW TO TEACH

- Demonstrate first-aid for cuts, burns, and eye injuries on a Saint role-playing each
- Discuss why eye protection is non-negotiable around solder, sparks, and ejected parts
- Have the Saint identify which injuries need immediate adult intervention
- Reinforce that knowing when to stop work matters more than knowing the response

Completion: Saint explains first aid and prevention for cuts, burns, and eye injuries from robotics work.

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STEP 1: DISCOVER — TEACHING GUIDE (CONTINUED)

Requirement 1c: Explain the difference between remote-controlled systems, telerobots, and autonomous robots, giving one real example of each.

HOW TO TEACH

- Walk the three categories with one real example of each (RC car, surgical telerobot, autonomous vacuum)
- Have the Saint explain what control loop separates each from the others
- Discuss what each category does well and where it fails
- Reinforce that 'robot' is plural — the term means different machines in different contexts

Completion: Saint explains the difference between remote-controlled, telerobotic, and autonomous robots with one real example of each.



STEP 2: PLAN

LEADER PREPARATION

- ☐ Review all PLAN requirements thoroughly
- ☐ Gather necessary resources and materials
- ☐ Prepare discussion questions and activities
- ☐ Identify potential challenges saints may face

STEP 2: PLAN — TEACHING GUIDE

Requirement 2a: Explain three major fields of robotics (sensing, programming, mobility, manipulation, or human–robot interaction) and how they work together in a robot system.

HOW TO TEACH

- Pick three robotics fields the Saint can actually study at his level
- Walk how each field contributes to a real robot system
- Have him explain how the fields connect in one real product
- Reinforce that systems thinking is what separates engineers from tinkerers

Completion: Saint explains three major robotics fields and how they work together in a robot system.

Requirement 2b: Choose a real task for a robot or robotic subsystem to perform and describe what success would look like, including at least one sensor input.

HOW TO TEACH

- Help the Saint pick a real task the robot will accomplish, not an aspirational one
- Have him define success in measurable terms (distance, time, accuracy)
- Discuss what sensor input the robot needs to do the task
- Reinforce that vague tasks produce vague robots

Completion: Saint chooses a real robot task and defines success in measurable terms with at least one sensor input.

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STEP 2: PLAN — TEACHING GUIDE (CONTINUED)

Requirement 2c: Create a simple design plan showing components, degrees of freedom, and how the robot will be controlled.

HOW TO TEACH

- Walk the design plan: components, degrees of freedom, control method
- Have the Saint sketch the plan in his own hand before building
- Discuss what constraints will shape the build (budget, time, skill, parts)
- Reinforce that a sketch precedes the build, not the other way around

Completion: Saint produces a simple design plan showing components, degrees of freedom, and control method.



STEP 3: ACT

LEADER PREPARATION

- ☐ Review all ACT requirements thoroughly
- ☐ Gather necessary resources and materials
- ☐ Prepare discussion questions and activities
- ☐ Identify potential challenges saints may face

STEP 3: ACT — TEACHING GUIDE

Requirement 3a: Build a robot or robotic subsystem of your own design with at least two degrees of freedom that performs the chosen task.

HOW TO TEACH

- Inspect tools and workspace before any cutting, soldering, or assembly
- Have the Saint build the robot himself, guiding when he gets stuck
- Watch for the two degrees of freedom and that they actually move
- Reinforce that building reveals what design missed

Completion: Saint builds a robot or subsystem of his own design with at least two degrees of freedom performing the chosen task.

Requirement 3b: Program the robot using code or a flow-based system so that it responds to sensor input to complete the task.

HOW TO TEACH

- Walk the programming step by step — input, processing, output
- Have the Saint write the code or build the flow himself, not paste from a tutorial
- Discuss what the robot should do when the sensor reading is ambiguous
- Reinforce that good code anticipates failure, not just success

Completion: Saint programs the robot to respond to sensor input and complete the task.

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STEP 3: ACT — TEACHING GUIDE (CONTINUED)

Requirement 3c: Test the robot multiple times, identify at least one failure or limitation, and make a physical or programming improvement.

HOW TO TEACH

- Run the robot multiple times in the real environment, not the demo bench
- Have the Saint identify a failure or limitation and document it
- Walk the improvement (physical or programming) and re-test
- Reinforce that iteration is the discipline that separates working from clever

Completion: Saint tests the robot multiple times, identifies one failure or limitation, and makes a physical or programming improvement.

Requirement 3d: Demonstrate the robot performing its task reliably and explain how the design, sensors, and program work together.

HOW TO TEACH

- Have the Saint demonstrate the robot reliably for an audience
- Walk him through explaining design, sensors, and program in plain language
- Discuss what he would build next if he had more time
- Reinforce that being able to explain the system is the test of understanding

Completion: Saint demonstrates the robot performing reliably and explains how design, sensors, and program work together.



STEP 4: REFLECT

LEADER PREPARATION

- ☐ Review all REFLECT requirements thoroughly
- ☐ Gather necessary resources and materials
- ☐ Prepare discussion questions and activities
- ☐ Identify potential challenges saints may face

STEP 4: REFLECT — TEACHING GUIDE

Requirement 4a: Explain what part of the robotics process (design, building, programming, or testing) was most challenging and how you overcame it.

HOW TO TEACH

- Give the Saint a moment of quiet reflection before answering
- Ask which step (design, building, programming, testing) cost him most
- Discuss what he did to push through the hardest moment
- Avoid correcting the Saint's reflection — listen and affirm

Completion: Saint explains which part of the robotics process was most challenging and how he overcame it.

Requirement 4b: Describe one ethical consideration or responsibility that comes with designing and using robots.

HOW TO TEACH

- Begin with a brief personal example of ethical responsibility in technology
- Ask the Saint to name one ethical concern in real robotics today
- Discuss the difference between can-build and should-build
- Keep the connection grounded in the Saint's own project

Completion: Saint describes one ethical consideration or responsibility that comes with designing and using robots.



RESOURCES & CONTACT

RECOMMENDED RESOURCES

- Saints Global Resource Library — Online materials and guides
- DPAR Method Quick Reference — Printable guide for leaders
- Child and Youth Program Guidebook — LDS Church Official Documentation for Children and Youth
- For the Strength of Youth — A Guide for Making Choices

SAINTS GLOBAL CONTACT INFORMATION

 www.saintsglobal.org

 support@saintsglobal.org

 Curriculum: curriculum@saintsglobal.org

Thank you for leading Saints Global!

Your dedication makes a difference in the lives of our children and youth.