SAINTS GLOBAL

LEADER GUIDE

ASTRONOMY

INTELLECTUAL CORE

Version 2026.1

PURPOSE & IDENTITY

SKILL BADGE PURPOSE

To develop wonder, precision, and disciplined scientific thinking through safe sky observation, use of optical tools, mapping and identification of celestial objects, and clear explanation of what is being seen and why.

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

- Night-sky safety and responsible observing practices
- Light pollution awareness and sky quality evaluation
- Optics basics and telescope/binocular use and care
- Star/constellation identification and sky navigation
- Planet and Moon observation, sketching, and explanation
- Understanding solar/stellar properties and observational evidence
- Communicating astronomy through charts, demonstrations, and teaching

TIME COMMITMENT	RECOMMENDED AGE
4-6 weeks (suggested)	13+

SAFETY CONSIDERATIONS

NIGHT OBSERVATION SAFETY

Observe with approved supervision and a clear plan for weather, terrain, traffic, and safe movement in darkness; use red-light discipline to preserve night vision.

COLD/HEAT/DEHYDRATION

Dress for conditions, hydrate, and monitor for heat/cold reactions and bites/stings; carry basic first-aid and know when to stop.

EYE SAFETY

Never look at the Sun or near-sun objects without proper solar filters designed for the task; improvised filters are not acceptable.

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 the likely hazards of astronomy activities (night travel, weather, wildlife, dehydration, equipment hazards) and describe how you will prevent and respond to them.

HOW TO TEACH

- Walk the intended observing site and identify hazards before nightfall
- Use a short scenario set (sudden cold, wet ground, insect surge, lightning)
- Have Saints explain ‘stop rules’ for unsafe conditions
- Connect preparedness to responsibility and care for others

Completion: Saint names hazards and gives specific prevention and response actions.

Requirement 1b: Demonstrate first aid knowledge for observation-related risks (heat/cold reactions, dehydration, bites/stings, and eye injury), and explain proper clothing and precautions for night and cold-weather observing.

HOW TO TEACH

- Have Saints demonstrate basic steps for dehydration and heat/cold response
- Discuss layered clothing, insulation, wind protection, and dry feet
- Practice red-light use and safe movement techniques
- Reinforce that comfort enables better decision-making

Completion: Saint explains prevention and first aid steps and shows correct clothing choices.

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STEP 1: DISCOVER — TEACHING GUIDE (CONTINUED)

Requirement 1c: Explain what light pollution is, how it affects astronomy, and describe one practical action you can take to protect or improve the night sky in your community.

HOW TO TEACH

- Use a 'glare vs shielded light' comparison example
- Discuss skyglow, contrast loss, and adaptation of night vision
- Introduce a simple sky-quality method (e.g., identify limiting magnitude or Bortle conceptually)
- Require one actionable local step (shielding, timing, bulb choice, advocacy)

Completion: Saint explains light pollution and proposes one realistic mitigation action.

Requirement 1d: Explain how to observe the Sun safely (including eclipses) and demonstrate correct solar-safety rules and equipment boundaries.

HOW TO TEACH

- Use a 'what is safe/unsafe' checklist with examples
- Discuss certified solar filters and why improvised methods fail
- Explain safe projection concepts at a high level (if applicable)
- Require the Saint to state a firm refusal rule for unsafe viewing

Completion: Saint accurately explains safe solar observation and refusal boundaries.

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 why binoculars and telescopes are important tools, compare at least two telescope types (including one non-optical wavelength telescope conceptually), and describe the purpose of three common telescope accessories or instruments.

HOW TO TEACH

- Use diagrams or a real scope to point out optical path and magnification concepts
- Compare refractor vs reflector vs catadioptric at a practical level
- Discuss non-optical telescopes (radio/IR/X-ray/UV) and what they reveal
- Cover three instruments/accessories (eyepiece, finder scope, mount, filters, camera, or spectroscope conceptually)

Completion: Saint explains tool importance, compares types, and describes three instruments accurately.

Requirement 2b: Prepare an observation plan that lists target objects, tools to be used (naked eye/binoculars/telescope/app/chart), and the safety and setup steps for the session.

HOW TO TEACH

- Teach ‘plan for the first 15 minutes’—setup, alignment, and easy targets
- Use star charts to choose season-appropriate targets
- Discuss backup targets if clouds or haze appear
- Require the Saint to explain the plan without reading verbatim

Completion: Saint provides a clear plan with targets, locating methods, and safety/setup steps.

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STEP 2: PLAN — TEACHING GUIDE (CONTINUED)

Requirement 2c: List the five most visible planets and explain which can show phases like the Moon and why; describe how planets move across the sky including retrograde motion at a high level.

HOW TO TEACH

- Use a simple model diagram (Sun–Earth–inner/outer planets) to explain phases
- Ask the Saint to distinguish inner vs outer planets by observation logic
- Explain apparent motion across nights and seasonal shifts
- Describe retrograde as an apparent effect of relative orbital motion

Completion: Saint correctly lists five planets, explains phases, and describes planetary motion concepts.

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: Under the natural night sky, identify 10 constellations (including at least four zodiac constellations) and eight conspicuous stars (including at least five of magnitude ~1 or brighter) and show them to a leader.

HOW TO TEACH

- Teach ‘anchor patterns’ first (Big Dipper/Cassiopeia/Orion) then branch outward
- Use a star chart/app as a tool, not a crutch—require pointing and explaining
- Discuss why brightness varies (distance, luminosity, extinction) briefly
- Have the Saint teach back one constellation to another person

Completion: Saint correctly identifies the required constellations and stars in the sky.

Requirement 3b: Make two direct-observation sketches of the Big Dipper or Cassiopeia showing orientation change, including the North Star and the horizon.

HOW TO TEACH

- Emphasize accuracy of relative positions over artistic style
- Use horizon landmarks for reference
- Discuss Earth’s rotation as the driver of apparent motion
- Ask the Saint to predict how the pattern will move before the second sketch

Completion: Saint produces two observational sketches and explains the apparent rotation correctly.

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STEP 3: ACT — TEACHING GUIDE (CONTINUED)

Requirement 3c: Observe one planet and describe what you saw, including color, brightness, steadiness, and any visible phase or disk (if equipment allows).

HOW TO TEACH

- Teach careful description (what is actually seen vs assumed)
- Discuss atmospheric seeing and twinkling
- Encourage comparison to nearby stars for color/brightness
- Use binoculars/telescope appropriately if available

Completion: Saint provides a clear, accurate description based on direct observation.

Requirement 3d: Create a 12-month evening-sky visibility chart for the five visible planets using approved resources, and explain how you decided what 'observable' means for your location.

HOW TO TEACH

- Use a consistent definition (e.g., above horizon after dusk) appropriate to the Saint's location
- Teach that calendars shift with latitude and seasons
- Require the Saint to explain the data source and limitations
- Encourage clean presentation (table or chart)

Completion: Saint produces a chart and explains the reasoning and source limitations.

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STEP 3: ACT — TEACHING GUIDE (CONTINUED)

Requirement 3e: Sketch the Moon and label five maria (seas) and five craters from observation, then explain how the Moon's phases and eclipses relate to Sun–Earth–Moon positions.

HOW TO TEACH

- Teach using a 'terminator line' to judge phase shape
- Encourage consistent viewing location for better comparison
- Use a simple diagram to explain alignments for eclipses and phases
- Reinforce observational honesty—label only what is truly recognized

Completion: Saint completes Moon sketches/observations and explains phases and eclipses correctly.

Requirement 3f: Explain the Sun's composition and how it compares to other stars, define sunspots, and identify one red, one blue, and one yellow star (other than the Sun) and explain what the colors mean.

HOW TO TEACH

- Explain color as temperature at a high level
- Discuss why sunspots are cooler regions and how they relate to solar activity
- Have the Saint point out stars in the sky and describe color carefully
- Discuss why atmosphere can distort perceived color near the horizon

Completion: Saint accurately explains Sun basics, sunspots, and identifies star colors with meaning.

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STEP 3: ACT — TEACHING GUIDE (CONTINUED)

Requirement 3g: Complete one outreach or extended observing option: host a star party, assist a public star party, visit an observatory/planetarium and report, complete an extended observation session beyond the basics, or produce a labeled image series of celestial motion.

HOW TO TEACH

- Prioritize clear teaching and safe observing behavior
- Use a simple script for presenting objects to a group
- Encourage humility—admit what you don't know and verify
- Debrief with the leader immediately after the activity

Completion: Saint completes an approved option and demonstrates learning and teaching through it.

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 the Milky Way is and what we are seeing when we look at it, and describe one way astronomy deepened your sense of wonder and responsibility.

HOW TO TEACH

- Discuss the Milky Way as our galaxy seen from within
- Connect dark-sky protection to preserving wonder and learning
- Encourage a concrete example from the Saint's own observations
- Keep reflection grounded and specific

Completion: Saint explains the Milky Way correctly and shares a concrete personal insight.

Requirement 4b: Identify three astronomy-related career pathways or hobby pathways and describe the training, costs, and next steps for one you might pursue.

HOW TO TEACH

- Include research, engineering, education, instrumentation, planetarium work, and data science roles
- Discuss practical training (courses, clubs, volunteering, entry equipment)
- Encourage safe, supervised next steps
- Connect discipline and curiosity to long-term growth

Completion: Saint identifies three pathways and explains one with a realistic next step.

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

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Thank you for leading Saints Global!

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