Strategic Planning Document for Fundamentals of Robotic Surgery Program

By **SAGES FRS task force**

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1. Executive Summary

This strategic plan outlines the resources and process needed for the development/ updating of the fundamentals of robotic surgery (FRS) program, created by a multidisciplinary volunteer SAGES task force. The FRS program will provide surgical residents, fellows, and practicing physicians an opportunity to learn fundamental skills in robotic surgery in a consistent, evidence-based format and to test cognitive, surgical decision-making, technical, and team-based skills with the goal of improving the quality of patient care. It will consist of three core components:

1. Cognitive and Decision-making Skills training with multiple-choice assessment
2. Individual Surgeon Technical Skills Training & Evaluation
3. Operating Room (OR) Team Training & Team Competency Evaluation

Each component will include structured curricula and competency assessment tools and will be adaptable for integration into institutional training and assessment pathways.

2. Purpose and Objectives

Purpose

To equip institutions, surgeons, and surgical trainees across the country with a free, standardized curriculum to ensure safe, effective, and appropriate use of robotic surgery platforms. To support institutions in training, assessing, and certifying surgical trainees, surgeons, and surgical teams in robotic-assisted surgery through a modular, evidence-based framework.

Primary Objectives

- Provide a competency-based curriculum encompassing cognitive, technical, and team-based training.

- Ensure all modules are accessible and implementable at varying institutional resource levels.
- Support national standardization while allowing institutional flexibility.
- Facilitate self-directed learning and structured assessment.
- Enable certification in basic robotic surgery via validated tools.

3. Stakeholders

SAGES (lead)
FRS TF, robotic cmt, AI TF, Ed council?, other?
SRS
ISE
AORN
Industry partners
ASE (invite ?)
Ergonomics society (invite ?)
ACS (invite?)
AUA (invite?)
ACOG (invite?)
ABS?
Other societies ?

4. Curriculum Framework Overview

a) *Cognitive and decision-making skills:* Online modules covering available robotic systems, patient selection, troubleshooting, safety, ergonomics, and core procedures with a Multiple Choice Exam (standardized, benchmarked)
b) *Technical Skills Training and Assessment*: Simulation-based training on console skills, camera control, wrist articulation, suturing, dissection. Objective Performance Assessment of Technical Skills using the FRS dome (virtual and physical dome; Skills Checklist)
c) *OR Team Training*: Scenario-based training focused on communication, emergency procedures, and team dynamics in robotic OR. Team-Based Simulation Assessment (TeamSTEPPS based ?) |

5. Development Timeline (to be finalized at November 2025 retreat)

Phase	Dates	Key Activities
Task Force Formation	June- July 2025	Appoint volunteer task force members

Systematic review	July 2025 – November 2025	Review and synthesize available literature on existing robotic curricula
FRS module review and gap analysis	August – October 2025	Review by TF members of FRS modules and determine needed gaps/ changes
Strategic planning meeting	November 2025 (along with SAGES board retreat)	Define working groups, development tasks, deliverables, and confirm / adjust timeline
Content Development	December 2025 – November 2026 Writing retreat at 2026 SAGES meeting ?	Write cognitive content, create team training scenarios, create MCQ, address strategic planning objectives 2026 annual meeting will be used for the group to get together to advance tasks
Pilot Testing & Feedback	December 2026 – April 2027	Pilot at 3–5 institutions; refine tools and materials
Assessment Validation	May 2027- August 2027	Development and psychometric review of MCQ test and technical/team assessments
Train the trainer development	October 2026 – August 2027	Develop train the trainer modules for FRS instructors
Finalization & Packaging |	September 2027- November 2027	Final curriculum draft, facilitator guides, deployment framework
Approval by SAGES Board	November 2027	Presentation to and approval by SAGES board
Finetuning	December 2027 – March 2028	Implement feedback received from board; finalize any missing items
Public Launch	Before / at SAGES 2028	Dissemination via organization's website; testing at SAGES

6. Resources Required (to be finalized at November 2025 retreat)

Given that this project will be developed by volunteers, primary needs include:

Human Resources:

- Program manager to oversee project execution/ completion
- FRS task force chairs to lead program development and guide working groups
- FRS TF members to develop / update curriculum content
- Subject Matter Experts (FRS TF, robotic surgeons, educators, nurses)
- Psychometricians (TBD) for test validation
- Medical illustrators/content developers/ instructional designers (TBD)
- Institutional partners for pilot testing (recruit via FRS TF)
- Other?

Technical/Platform Requirements:

- SAGES Learning Management System (LMS) to host content
- Downloadable training packages (PDFs, videos, facilitator guides)
- Video hosting for team training scenarios
- Other?

Financial Needs:

- Shared/ full FTE program manager to oversee day by day project execution/ completion
    - Alternatively, 0.5 FTE funding for fellow with additional 0.5 FTE by institution
- BSC staffer to organize working groups
- Part FTE (TBD) for instructional designer/ medical illustrator
- Funding for platform hosting, graphics, video editing (TBD)
- Funding for two TF retreats (select members; TBD) one in conjunction with 2025 SAGES board retreat and one at 2026 SAGES annual meeting
- Psychometric validation services
- honoraria for pilot institutions (if budget allows)

> Note: Funding may be pursued via industry sponsorship, SAGES foundation grants, and/ or in-kind support from participating institutions.

7. Deliverables (to be finalized at November 2025 retreat)

	Deliverable	**Due Date**
1	Confirm Task Force Member Roster	July 2025
2	Existing FRS module review and gap analysis	October 2025
3	Systematic review completion (initial draft)	November 2025
4	Define final tasks/ deliverables/ timelines	December 2025
5	Draft Curriculum Content – all components Preliminary checkpoint	November 2026 April 2026
6	Pilot Evaluation Report	April 2027
7	Train the trainer modules	August 2027
8	Cognitive MCQ Test + Blueprint	August 2027
9	Technical Skills assessment finalization and benchmarking	August 2027
10	OR Team Training Scenarios + Rubric	August 2027
11	Final Curriculum Toolkit (PDFs, tests, videos)	February 2028
12	Publications of FRS curriculum and assessments	February 2028
13	Public Launch Package & Website	March 2028

8. Assessment and Certification

Each module will include built-in, competency-based assessments. All assessments will be validated through pilot testing and expert consensus.

Cognitive:

- Online MCQ exam (50–75 questions) with a recommended passing threshold
- Blueprinted to ACGME/RCPSC core competencies

Technical (Individual Surgeon):

- OSATS-style checklist / global rating scale for docking/ overall performance
- FRS task specific metrics and benchmarks
- AI based automated assessment (TBD)

Team-Based (OR Team):

- TeamSTEPPS-based simulation evaluation rubric to assess crisis management, communication, team work, and task coordination

9. Implementation and Dissemination Strategy

- FRS Curriculum will be made freely available to institutions nationwide via the organization's website.
- Facilitator training guides will accompany each module.
- Live and recorded webinars will train institutions on implementation.
- Partnerships with residency programs and hospital systems to promote uptake.
- Partnership with ABS to promote/ mandate FRS to training programs?
- Surgical Endoscopy publications on curriculum to disseminate our work
- SAGES annual meeting presentations to disseminate our work

10. Risk Management and Mitigation

Risk	***Mitigation strategy***
Volunteer burnout or delays	Clear expectations and timelines, program manager/ fellow supervision, small subgroups
Limited funding	Utilize low-cost digital platforms; seek in-kind support
Assessment validity challenges	Engage psychometrician early, partner with academic institutions
Institutional resource variability	Modular design allows for partial adoption and customization

11. Budget
TBD with BSC staff input at November 2025 strategic retreat?

12. Conclusion

This national robotic surgery curriculum, built by volunteer experts, aims to raise the baseline of surgical competency across institutions. With a scalable, modular structure and validated assessments, the project will provide a practical yet rigorous training pathway for both individuals and teams working in robotic surgery environments.