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Job Analysis Report

National Board of Surgical Technology and Surgical Assisting (NBSTSA)

Certified Surgical Technologist (CST)

February 2023

Submitted to:

THE NATIONAL BOARD
OF SURGICAL TECHNOLOGY
AND SURGICAL ASSISTING

Contents

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Executive Summary

This report describes the methodology and procedures used to conduct a job analysis and develop the exam specifications for the National Board of Surgical Technology and Surgical Assisting (NBSTSA) Certified Surgical Technologist (CST) certification examination.

The three major activities that comprise the job analysis process described in this report are as follows:

1. **Job Analysis Committee Meeting** – A gathering of subject matter experts (SMEs) to discuss and develop a description of the scope of practice
2. **Job Analysis Survey** – A large-scale survey of practitioners not involved with the SME panel to validate the task and knowledge statements developed by the committee
3. **Development of Examination Specifications** – The development of an Examination Content Outline by the committee based on the results of the survey

Several practitioners were assembled by NBSTSA to serve as subject matter experts (SMEs). The individuals selected represent a wide variety of work-related characteristics such as years of experience, work setting, geographic location, and areas of specialty. This helps in developing a scope of practice that is reflective of the roles and responsibilities of the job role and is relatively free from bias. By analyzing the experiences and expertise of current practitioners, the results from the job analysis become the basis of a validated assessment that reflects the competencies required for competent job performance.

The job analysis process utilized in this study yields exam specifications that accurately reflect the scope of practice, allowing for the development of fair, accurate, and realistic assessments of candidates' readiness for certification. The resultant Examination Content Outline (Appendix E) indicates a 150-item examination with content distribution requirements at the competency area (content domain) level as well as topic (content subdomain) level. The three competency areas are:

1. Perioperative Care
2. Ancillary Duties
3. Basic Science

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Introduction

This report describes the methodology and procedures used to conduct a job analysis and develop the exam specifications for the National Board of Surgical Technology and Surgical Assisting (NBSTSA) Certified Surgical Technologist (CST) certification examination.

The job analysis was conducted in accordance with principles and practices outlined in the *Standards for Educational and Psychological Testing*[1], which describe principles and guidelines for all aspects of test development, including content validation.

A job analysis (sometimes referred to as a practice analysis, job task analysis, role delineation study, work analysis, or competency profiling) is a scientific inquiry conducted to identify the tasks and work activities conducted, the context in which those tasks and activities are carried out, and the competencies (knowledge areas, skills, and abilities) required to perform a job role successfully[2]. Different methods can be used which may differ in the levels of specificity in analyzing and describing different work elements, with the choice of method largely dependent on the intended purpose and use of the results. The methodology of the current analysis was tailored to the creation of exam specifications for test development.

When completed, the job analysis process utilized in this study yields exam specifications that accurately reflect the scope of practice, allowing for the development of fair, accurate, and realistic assessments of candidates' readiness for certification. The job analysis is typically performed every 5 to 7 years so that the content outline represents the current scope of practice. Because it serves as the primary basis for content validity evidence, as required by the aforementioned standards, the job analysis is a primary mechanism by which a certifying body or regulatory board can ensure the accuracy and defensibility of an exam. It serves as the foundation of the certification exam and is critical to the success of the entire exam development process. All necessary documentation verifying that the validation process has been implemented in accordance with professional standards is included in this report.

This report is divided into the major activities of the job analysis process, which are:

1. **Job Analysis Committee Meeting** – A gathering of subject matter experts (SMEs) to discuss and develop a description of the scope of practice
2. **Job Analysis Survey** – A large-scale survey to practitioners not involved with the SME panel to validate the task statements developed by the committee
3. **Development of Examination Specifications** – The development of an Examination Content Outline by the committee based on the results of the survey

[1] American Educational Research Association, American Psychological Association, National Council on Measurement in Education (2014). *Standards for Educational and Psychological Testing*. Washington, DC: AERA.

[2] Sackett, P.R., Walmsley, P.T., Laczo, R.M. (2012). *Job and work analysis: Industrial and Organizational Psychology.* In N. Schmitt, S. Highhouse (Eds.), Comprehensive Handbook of Psychology, Volume 12. New York, NY: John Wiley and Sons.

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Job Analysis Committee Meeting

NBSTSA selected subject matter experts (SMEs) to represent a wide variety of work-related characteristics such as years of experience, work setting, geographic location, and areas of specialty to develop a scope of practice that is reflective of the roles and responsibilities of the job and is relatively free from bias. See Appendix A for a complete list of the SMEs and their qualifications.

Prior to the job analysis committee meeting, eleven SMEs were asked to help provide background information on the job role which included keeping a detailed job log for two weeks and to provide any current job descriptions and/or descriptions of work activities. This background collection period was conducted between March 1, 2022 and March 18, 2022.

PSI Services LLC (PSI) conducted a job analysis committee meeting on March 28-29, 2022 with SMEs to discuss the scope of practice and develop a list of tasks that reflect the job role. PSI led the SMEs in refining task statements, and organizing them into a domain and subdomain structure. In addition to background information, the outgoing exam content outline was used as a resource when developing the tasks. See Appendix B for the presentation used to orient the job analysis committee at the beginning of the meeting.

The job analysis committee developed 186 task statements, as follows:

1. **Perioperative Care**
    - A. Preoperative Preparation
        1. Review surgeon's preference card.
        2. Verify availability of surgery equipment (e.g., reserve equipment for surgery).
        3. Don personal protective equipment.
        4. Utilize preoperative documentation (e.g., informed consent, advanced directives, allergies, laboratory results).
        5. Consider patient needs (e.g., bariatrics, geriatrics, pediatrics, immunocompromised, patient allergies).
        6. Prepare the operating room environment (e.g., temperature, humidity, lights, suction, wiping down the room and furniture, managing OR traffic patterns).
        7. Check temperature of blanket and solution warmer and document appropriately.
        8. Check laminar air flow before surgery.
        9. Obtain extra SCD's Case Carts, OB and CS Packs from Central Supply.
        10. Coordinate additional equipment (e.g., bovie pad, pneumatic tourniquet, sequential compression devices, thermoregulatory devices, positioning devices).
        11. Obtain and inspect instruments and supplies needed for surgery.
        12. Drape Mayo stand and reinforce with towels
        13. Setup secondary mayo stand to eliminate cross-contamination.
        14. Perform basic hand wash.
        15. Check packages for sterile integrity and expiration indicators
        16. Open sterile supplies/instruments while maintaining aseptic technique.
        17. Perform surgical scrub (e.g., initial, waterless).

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18. Don gown and gloves.
19. Assemble and set up sterile instruments and supplies for surgical procedures.
20. Transport the patient to operating room.
21. Transfer patient to operating room table.
22. Apply patient safety devices (e.g., bovie pad, safety strap, protective padding, x-ray safety).
23. Apply patient monitoring devices as directed.
24. Apply compression hose and / or sequential compression devices.
25. Participate in positioning the patient.
26. Prepare surgical site (e.g., hair removal, surgical preparation).
27. Exsanguinate the extremity
28. Gown and glove sterile team members.
29. Participate in draping the patient.
30. Secure cords/tubing to drapes and apply light handles.
31. Drape specialty equipment (e.g., c-arm, robot, microscope).
32. Participate in Universal Protocol (Time Out).

B. Intraoperative Procedures
    1. Maintain aseptic technique throughout the procedure (e.g., handling breaks in sterile technique)
    2. Follow Standard and Universal Precautions
    3. Anticipate the steps of surgical procedures
    4. Perform counts with circulator at appropriate intervals
    5. Prepare hemostatic agents (e.g. Flow seal, Arista or Surgicel, etc.)
    6. Verify, receive, mix, and label all medications and solutions
    7. Provide intraoperative assistance under the direction of the surgeon
    8. Assist as surgeon extracts foreign body from rectum
    9. Identify different types of operative incisions
    10. Identify instruments by:
        10a. function
        10b. application
        10c. classification
    11. Assemble, test, operate, and disassemble specialty equipment.
        11a. microscopes
        11b. computer navigation systems
        11c. thermal technology
        11d. laser technology (e.g., helium, argon, CO2 beam coagulators)
        11e. ultrasound technology (e.g., harmonic scalpel, phacoemulsification)
        11f. endoscopic technology
        11g. power equipment
        11h. robotic technology
    12. Assemble and maintain retractors
    13. Perform 2nd scrub role (e.g., hold retractors / scopes during case)
    14. Pass instruments and supplies
    15. Identify appropriate usage of sutures/needles and stapling devices
    16. Prepare, pass, and cut suture material as directed
    17. Provide assistance with stapling devices

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18. Differentiate among the various methods and applications of hemostasis (e.g., mechanical, thermal, chemical)
19. Irrigate, suction, and sponge operative site as directed
20. Monitor medication and solution use
21. Verify with surgeon the correct type and/or size of specialty specific implantable items
22. Prepare bone and tissue grafts (e.g., allograft, autograft, synthetic)
23. Verify, prepare, and label specimen(s)
24. Take specimens to the pathology lab for processing
25. Prepare drains, catheters, and tubing for insertion
26. Observe patient's intraoperative status (e.g., monitor color of blood, blood loss, patient position)
27. Perform appropriate actions during an emergency
28. Initiate preventative actions in potentially harmful situations
29. Connect and activate drains to suction apparatus
30. Prepare dressings and wound site
31. Assist in the application of casts, splints, braces, and similar devices
32. Assist in robotic operations as directed.
    - 32a. Assist surgeon in properly placing the robotic and non-robotic trocars, as needed;
    - 32b. Guide robot into the sterile field, then dock the robot;
    - 32c. Place proper instruments in the correct arm of the robot;
    - 32d. Pass needles and clips through the assistant port to surgeon;
    - 32e. Exchange robotic instruments as per surgeon's request

C. Postoperative Procedures
1. Report medication and solution amount used.
2. Report quantitative blood loss.
3. Participate in case debrief.
4. Remove drapes and other equipment (e.g., suction, cautery, instrumentation, nondisposable items) from patient.
5. Assist with removing any positioning devices.
6. Assist in postoperative cleaning of patient (prior to transfer of patient to the recovery bed).
7. Report abnormal postoperative findings (e.g., bleeding at surgical site, hematoma, rash).
8. Dispose of contaminated waste and drapes after surgery in compliance with Standard Precautions.
9. Transfer patient from operating table to stretcher.
10. Dispose of contaminated sharps and/or sharps container after surgery in compliance with Standard Precautions.
11. Perform room clean up and restock supplies.
12. Remove all unused supplies and return to their appropriate storage location.
13. Remove robotic instruments; undock then guide the robot away from the sterile field.
14. Terminal cleaning.
15. Reset OR once environmental disinfection has taken place. Including:
    - 15a. Making OR bed with linen;
    - 15b. Re-applying arms to OR bed;

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15c. Connecting suction and tubing to the wall;
15d. Laying out all supplies for next case;
15e. Make baby warmer with linen;
15f. Attach baby suction with tubing to wall;
15g. Attach O2 for baby to wall;
15h. Attach anesthesia suction and tubing to wall, connect suction tip and place accordingly;
15i. Re-wrap and organize monitor wires with leads on the EKG wires;
15j. Position equipment as needed in preparation for next case.

16. Wipe down any surface housekeeping is not allowed to touch with a chemical wipe (e.g., ESU, baby warmer, anesthesia machine, computers, etc.)
17. Wash and re-make recovery beds after the patient gets discharged. Place into recovery room.
18. Clean and wipe consoles as needed.
19. Assist with inventory of sterile supplies; verify expiration dates.
20. Mentoring new or traveling perioperative personnel.
21. Dock suction apparatus for cleaning.
22. Re-stock and organize each OR at end of day to ensure that all required minimum items are in the room and turn off lights.

2. Ancillary Duties

A. Administrative and Personnel

1. Revise surgeon's preference card as necessary.
2. Follow proper cost containment processes.
3. Create, maintain, and utilize preference cards for each surgeon.
4. Utilize computer technology for:
   4a. surgeon's preference cards;
   4b. interdepartmental communication;
   4c. continuing education;
   4d. research.
5. Follow hospital and national disaster plan protocol.
6. Recognize safety and environmental hazards (e.g., fire, chemical spill, laser, smoke).
7. Apply basic principles of electricity and electrical safety.
8. Apply ethical and legal practices related to surgical patient care.
9. Use interpersonal skills (e.g., listening, diplomacy, responsiveness, conflict resolution) and group dynamics.
10. Apply the importance of cultural diversity.
11. Demonstrates knowledge of concepts of death and dying.
12. Participate in organ and tissue procurement.
13. Serve as preceptor to perioperative personnel.
14. Provide assistance as needed to other OR rooms.
15. Pick up and release patients from ER.
16. Precept student techs as needed per service line.
17. Order supplies as needed.

B. Equipment Sterilization and Maintenance

1. Troubleshoot equipment malfunctions.
2. Decontaminate and clean instruments and equipment.
3. Pre-clean instruments using enzymatic cleaner.

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4. Separate all instruments and put them in basin with water.
5. Prepare single use devices for outsourced reprocessing .
6. Take dirty instruments and equipment to Central Supply.
7. Inspect, test, and assemble instruments and equipment.
8. Sterilize instruments and document results for immediate use items (e.g., short cycle).
9. Package and sterilize instruments and equipment.
10. Interpret and understand chemical and biological indicators.
11. Set up and utilize instrument tracking system(s).
12. Restock left over supplies and instruments.

3. Basic Science

A. Anatomy and Physiology

1. Use appropriate medical terminology and abbreviations.
2. Demonstrate knowledge of anatomical systems as they relate to the surgical procedure.
   - 2a. cardiovascular
   - 2b. endocrine
   - 2c. gastrointestinal
   - 2d. genitourinary
   - 2e. integumentary
   - 2f. lymphatic
   - 2g. muscular
   - 2h. neurological
   - 2i. ophthalmic
   - 2j. otorhinolaryngology
   - 2k. peripheral vascular
   - 2l. pulmonary
   - 2m. reproductive
   - 2n. skeletal
3. Demonstrate knowledge of human physiology as they relate to the surgical procedure.
   - 3a. cardiovascular
   - 3b. endocrine
   - 3c. gastrointestinal
   - 3d. genitourinary
   - 3e. integumentary
   - 3f. lymphatic
   - 3g. muscular
   - 3h. neurological
   - 3i. ophthalmic
   - 3j. otorhinolaryngology
   - 3k. peripheral vascular
   - 3l. pulmonary
   - 3m. reproductive
   - 3n. skeletal

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4. Identify the following surgical pathologies:
    4a. abnormal anatomy;
    4b. disease processes;
    4c. malignancies;
    4d. traumatic injuries;

B. Microbiology
1. Apply principles of surgical microbiology to operative practice.
    1a. classification and pathogenesis of microorganisms (e.g., cultures, pelvic washings, etc.);
    1b. infection control procedures (e.g., aseptic technique);
    1c. principles of tissue handling (e.g., Halsted principles, tissue manipulation methods, traction/counter traction);
    1d. stages of, and factors influencing wound healing (e.g., condition of patient, wound type);
    1e. surgical wound classification.
2. Identify and address factors that can influence an infectious process.

C. Surgical Pharmacology
1. Apply principles of surgical pharmacology to operative practice.
    1a. anesthesia related agents and medications;
    1b. blood and fluid replacement;
    1c. complications from drug interactions (e.g., malignant hyperthermia);
    1d. methods of anesthesia administration (e.g., general, local, block, MAC);
    1e. types, uses, action, and interactions of drugs and solutions (e.g., hemostatic agents, antibiotics, IV solutions);
    1f. weights, measures, and conversions.
2. Maintain awareness of maximum dosage (e.g., xylocaine, marcaine, heparin, epinephrine).

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Job Analysis Survey

PSI developed, administered, and monitored a survey to validate the tasks developed by the job analysis committee and to help determine content weighting. To this end, the survey collected respondents' ratings of the importance and frequency for each task. The importance and frequency scale were used to evaluate the appropriateness of the inclusion of each task statement.

Importance How important is this task to the job role?

0 - Not Relevant
1 - Minimally Important
2 - Somewhat Important
3 - Moderately Important
4 - Very Important
5 - Critically Important

Frequency Approximately how frequently do you perform this task in your role?

0 - Never/Not Relevant
1 - Rarely
2 - Seldom
3 - Occasionally
4 - Frequently
5 - Very Frequently

Between May 16, 2022 and May 23, 2022, a pilot survey was conducted with the job analysis committee and NBSTSA staff members to ensure that the survey was operating correctly, and any modifications or corrections were made address the pilot survey reviewers' comments. See Appendix C for a copy of the final job analysis survey.

The live survey was sent using online survey software to a list of 66,965 individuals that was obtained from NBSTSA. The list consisted of certified surgical technologists and associate members. The number of individuals that responded to the survey (tasks statements) was 3,848 (5.7%). The survey was opened on June 21, 2022 and closed on July 18, 2022. See Appendix D for the email sent to potential respondents.

Following the close of the survey, the data were analyzed to identify any respondents who did not complete the survey or provided responses lacking any variance (i.e., "straight-lining" or providing the same response to every task). Responses from 883 respondents were removed from the data set, yielding a usable number of 2,965 completed responses. Of those respondents who were removed, 883 were removed due to not completing the survey and none were removed due to a lack of variance in their responses.

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Table 1 shows the mean ratings provided for frequency and importance of the task statements.

Table 1.

Frequency and Importance Ratings for Task Statements.

Task Statements		Frequency	Importance
1	Review surgeon's preference card.	4.276	4.270
2	Verify availability of surgery equipment (e.g., reserve equipment for surgery).	4.249	4.285
3	Don personal protective equipment.	4.850	4.821
4	Utilize preoperative documentation (e.g., informed consent, advanced directives, allergies, laboratory results).	3.039	3.235
5	Consider patient needs (e.g., bariatrics, geriatrics, pediatrics, immunocompromised, patient allergies).	4.184	4.232
6	Prepare the operating room environment (e.g., temperature, humidity, lights, suction, wiping down the room and furniture, managing OR traffic patterns).	4.301	4.290
7	Check temperature of blanket and solution warmer and document appropriately.	2.273	2.539
8	Check laminar air flow before surgery.	1.743	2.358
9	Obtain extra SCD's Case Carts, OB and CS Packs from Central Supply.	2.878	2.905
10	Coordinate additional equipment (e.g., bovie pad, pneumatic tourniquet, sequential compression devices, thermoregulatory devices, positioning devices).	3.638	3.692
11	Obtain and inspect instruments and supplies needed for surgery.	4.655	4.657
12	Drape Mayo stand and reinforce with towels	4.620	4.450
13	Setup secondary mayo stand to eliminate cross-contamination.	2.978	3.503
14	Perform basic hand wash.	4.835	4.764
15	Check packages for sterile integrity and expiration indicators	4.869	4.865
16	Open sterile supplies/instruments while maintaining aseptic technique.	4.877	4.889
17	Perform surgical scrub (e.g., initial, waterless).	4.829	4.792
18	Don gown and gloves.	4.868	4.820
19	Assemble and set up sterile instruments and supplies for surgical procedures.	4.688	4.671
20	Transport the patient to operating room.	1.365	1.832
21	Transfer patient to operating room table.	3.546	3.717
22	Apply patient safety devices (e.g., bovie pad, safety strap, protective padding, x-ray safety).	3.371	3.766
23	Apply patient monitoring devices as directed.	2.398	3.020
24	Apply compression hose and / or sequential compression devices.	2.850	3.245
25	Participate in positioning the patient.	3.550	3.915
26	Prepare surgical site (e.g., hair removal, surgical preparation).	2.447	3.178
27	Exsanguinate the extremity	1.802	2.632
28	Gown and glove sterile team members.	4.763	4.586
29	Participate in draping the patient.	4.705	4.594

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Task Statements		Frequency	Importance
30	Secure cords/tubing to drapes and apply light handles.	4.692	4.455
31	Drape specialty equipment (e.g., c-arm, robot, microscope).	4.231	4.274
32	Participate in Universal Protocol (Time Out).	4.845	4.833
33	Maintain aseptic technique throughout the procedure (e.g., handling breaks in sterile technique)	4.827	4.875
34	Follow Standard and Universal Precautions	4.895	4.841
35	Anticipate the steps of surgical procedures	4.828	4.646
36	Perform counts with circulator at appropriate intervals	4.737	4.741
37	Prepare hemostatic agents (e.g. Flow seal, Arista or Surgicel, etc.)	3.990	4.244
38	Verify, receive, mix, and label all medications and solutions	4.645	4.728
39	Provide intraoperative assistance under the direction of the surgeon	4.498	4.576
40	Assist as surgeon extracts foreign body from rectum	2.153	2.968
41	Identify different types of operative incisions	3.160	3.309
42	Identify instruments by: function	4.469	4.394
43	Identify instruments by: application	4.297	4.229
44	Identify instruments by: classification	3.969	3.912
45	Assemble, test, operate, and disassemble specialty equipment: microscopes	3.305	3.624
46	Assemble, test, operate, and disassemble specialty equipment: computer navigation systems	2.344	2.735
47	Assemble, test, operate, and disassemble specialty equipment: thermal technology	2.352	2.791
48	Assemble, test, operate, and disassemble specialty equipment: laser technology (e.g., helium, argon, CO2 beam coagulators)	2.452	3.051
49	Assemble, test, operate, and disassemble specialty equipment: ultrasound technology (e.g., harmonic scalpel, phacoemulsification)	3.204	3.493
50	Assemble, test, operate, and disassemble specialty equipment: endoscopic technology	3.132	3.421
51	Assemble, test, operate, and disassemble specialty equipment: power equipment	3.854	3.901
52	Assemble, test, operate, and disassemble specialty equipment: robotic technology	2.523	2.964
53	Assemble and maintain retractors	3.976	4.093
54	Perform 2nd scrub role (e.g., hold retractors / scopes during case)	3.789	4.093
55	Pass instruments and supplies	4.804	4.688
56	Identify appropriate usage of sutures/needles and stapling devices	4.551	4.512
57	Prepare, pass, and cut suture material as directed	4.709	4.599
58	Provide assistance with stapling devices	3.708	4.017
59	Differentiate among the various methods and applications of hemostasis (e.g., mechanical, thermal, chemical)	3.708	3.954
60	Irrigate, suction, and sponge operative site as directed	4.399	4.416
61	Monitor medication and solution use	4.257	4.365

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Task Statements		Frequency	Importance
62	Verify with surgeon the correct type and/or size of specialty specific implantable items	4.198	4.499
63	Prepare bone and tissue grafts (e.g., allograft, autograft, synthetic)	3.264	3.915
64	Verify, prepare, and label specimen(s)	4.391	4.642
65	Take specimens to the pathology lab for processing	1.864	2.637
66	Prepare drains, catheters, and tubing for insertion	3.660	3.945
67	Observe patient's intraoperative status (e.g., monitor color of blood, blood loss, patient position)	3.223	3.629
68	Perform appropriate actions during an emergency	3.449	4.713
69	Initiate preventative actions in potentially harmful situations	3.475	4.527
70	Connect and activate drains to suction apparatus	3.505	3.816
71	Prepare dressings and wound site	4.377	4.274
72	Assist in the application of casts, splints, braces, and similar devices	2.951	3.287
73	Assist in robotic operations as directed: Assist surgeon in properly placing the robotic and non-robotic trocars, as needed;	1.918	2.631
74	Assist in robotic operations as directed: Guide robot into the sterile field, then dock the robot;	1.522	2.284
75	Assist in robotic operations as directed: Place proper instruments in the correct arm of the robot;	2.108	2.723
76	Assist in robotic operations as directed: Pass needles and clips through the assistant port to surgeon;	1.973	2.641
77	Assist in robotic operations as directed: Exchange robotic instruments as per surgeon's request	2.126	2.715
78	Report medication and solution amount used.	4.426	4.463
79	Report quantitative blood loss.	2.538	3.289
80	Participate in case debrief.	2.900	3.261
81	Remove drapes and other equipment (e.g., suction, cautery, instrumentation, nondisposable items) from patient.	4.706	4.245
82	Assist with removing any positioning devices.	3.979	3.904
83	Assist in postoperative cleaning of patient (prior to transfer of patient to the recovery bed).	4.318	4.041
84	Report abnormal postoperative findings (e.g., bleeding at surgical site, hematoma, rash).	3.223	4.099
85	Dispose of contaminated waste and drapes after surgery in compliance with Standard Precautions.	4.705	4.464
86	Transfer patient from operating table to stretcher.	4.422	4.258
87	Dispose of contaminated sharps and/or sharps container after surgery in compliance with Standard Precautions.	4.809	4.700
88	Perform room clean up and restock supplies.	4.252	4.048
89	Remove all unused supplies and return to their appropriate storage location.	4.326	3.873
90	Remove robotic instruments; undock then guide the robot away from the sterile field.	1.882	2.421
91	Terminal cleaning.	1.888	3.092

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Task Statements		Frequency	Importance
92	Reset OR once environmental disinfection has taken place. Including: Making OR bed with linen;	3.418	3.497
93	Reset OR once environmental disinfection has taken place. Including: Re-applying arms to OR bed;	3.467	3.289
94	Reset OR once environmental disinfection has taken place. Including: Connecting suction and tubing to the wall;	2.838	3.064
95	Reset OR once environmental disinfection has taken place. Including: Laying out all supplies for next case;	4.504	4.128
96	Reset OR once environmental disinfection has taken place. Including: Make baby warmer with linen;	1.281	1.853
97	Reset OR once environmental disinfection has taken place. Including: Attach baby suction with tubing to wall;	1.120	1.756
98	Reset OR once environmental disinfection has taken place. Including: Attach O2 for baby to wall;	1.048	1.753
99	Reset OR once environmental disinfection has taken place. Including: Attach anesthesia suction and tubing to wall, connect suction tip and place accordingly;	1.639	2.309
100	Reset OR once environmental disinfection has taken place. Including: Re-wrap and organize monitor wires with leads on the EKG wires;	1.601	2.059
101	Reset OR once environmental disinfection has taken place. Including: Position equipment as needed in preparation for next case.	3.932	3.827
102	Wipe down any surface housekeeping is not allowed to touch with a chemical wipe (e.g., ESU, baby warmer, anesthesia machine, computers, etc.)	3.347	3.557
103	Wash and re-make recovery beds after the patient gets discharged. Place into recovery room.	0.974	1.507
104	Clean and wipe consoles as needed.	2.873	3.147
105	Assist with inventory of sterile supplies; verify expiration dates.	3.501	3.842
106	Mentoring new or traveling perioperative personnel.	3.384	3.781
107	Dock suction apparatus for cleaning.	2.840	3.043
108	Re-stock and organize each OR at end of day to ensure that all required minimum items are in the room and turn off lights.	3.573	3.685
109	Revise surgeon's preference card as necessary.	3.306	3.849
110	Follow proper cost containment processes.	2.789	2.960
111	Create, maintain, and utilize preference cards for each surgeon.	3.230	3.658
112	Utilize computer technology for: surgeon's preference cards;	2.514	2.902
113	Utilize computer technology for: interdepartmental communication;	3.145	3.378
114	Utilize computer technology for: continuing education;	3.921	3.946
115	Utilize computer technology for: research.	2.061	2.442
116	Follow hospital and national disaster plan protocol.	2.932	3.980
117	Recognize safety and environmental hazards (e.g., fire, chemical spill, laser, smoke).	3.578	4.350
118	Apply basic principles of electricity and electrical safety.	3.872	4.207
119	Apply ethical and legal practices related to surgical patient care.	4.225	4.410

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Task Statements		Frequency	Importance
120	Use interpersonal skills (e.g., listening, diplomacy, responsiveness, conflict resolution) and group dynamics.	4.359	4.387
121	Apply the importance of cultural diversity.	3.986	4.061
122	Demonstrates knowledge of concepts of death and dying.	2.852	3.692
123	Participate in organ and tissue procurement.	1.681	2.557
124	Serve as preceptor to perioperative personnel.	3.326	3.728
125	Provide assistance as needed to other OR rooms.	4.004	4.010
126	Pick up and release patients from ER.	0.591	1.052
127	Precept student techs as needed per service line.	3.204	3.611
128	Order supplies as needed.	1.874	2.466
129	Troubleshoot equipment malfunctions.	3.225	3.823
130	Decontaminate and clean instruments and equipment.	2.877	3.706
131	Pre-clean instruments using enzymatic cleaner.	4.274	4.185
132	Separate all instruments and put them in basin with water.	3.444	3.496
133	Prepare single use devices for outsourced reprocessing .	2.616	2.717
134	Take dirty instruments and equipment to Central Supply.	4.171	4.018
135	Inspect, test, and assemble instruments and equipment.	3.689	3.965
136	Sterilize instruments and document results for immediate use items (e.g., short cycle).	1.688	2.867
137	Package and sterilize instruments and equipment.	1.607	2.717
138	Interpret and understand chemical and biological indicators.	3.921	4.283
139	Set up and utilize instrument tracking system(s).	1.449	2.193
140	Restock left over supplies and instruments.	3.525	3.517
141	Use appropriate medical terminology and abbreviations.	4.369	4.289
142	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: cardiovascular	3.039	3.630
143	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: endocrine	2.491	3.137
144	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: gastrointestinal	3.445	3.704
145	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: genitourinary	3.282	3.660
146	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: integumentary	3.102	3.468
147	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: lymphatic	2.760	3.306
148	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: muscular	3.582	3.799
149	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: neurological	2.860	3.397
150	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: ophthalmic	2.474	3.144
151	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: otorhinolaryngology	2.808	3.290
152	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: peripheral vascular	2.919	3.482

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Task Statements		Frequency	Importance
153	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: pulmonary	2.564	3.308
154	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: reproductive	3.245	3.654
155	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: skeletal	3.671	3.828
156	Demonstrate knowledge of human physiology as they relate to the surgical procedure: cardiovascular	2.844	3.395
157	Demonstrate knowledge of human physiology as they relate to the surgical procedure: endocrine	2.430	3.030
158	Demonstrate knowledge of human physiology as they relate to the surgical procedure: gastrointestinal	3.244	3.513
159	Demonstrate knowledge of human physiology as they relate to the surgical procedure: genitourinary	3.103	3.495
160	Demonstrate knowledge of human physiology as they relate to the surgical procedure: integumentary	2.934	3.373
161	Demonstrate knowledge of human physiology as they relate to the surgical procedure: lymphatic	2.645	3.167
162	Demonstrate knowledge of human physiology as they relate to the surgical procedure: muscular	3.463	3.682
163	Demonstrate knowledge of human physiology as they relate to the surgical procedure: neurological	2.811	3.328
164	Demonstrate knowledge of human physiology as they relate to the surgical procedure: ophthalmic	2.443	3.089
165	Demonstrate knowledge of human physiology as they relate to the surgical procedure: otorhinolaryngology	2.677	3.186
166	Demonstrate knowledge of human physiology as they relate to the surgical procedure: peripheral vascular	2.803	3.339
167	Demonstrate knowledge of human physiology as they relate to the surgical procedure: pulmonary	2.538	3.229
168	Demonstrate knowledge of human physiology as they relate to the surgical procedure: reproductive	3.136	3.502
169	Demonstrate knowledge of human physiology as they relate to the surgical procedure: skeletal	3.502	3.687
170	Identify the following surgical pathologies: abnormal anatomy;	3.494	3.789
171	Identify the following surgical pathologies: disease processes;	3.121	3.478
172	Identify the following surgical pathologies: malignancies;	3.048	3.512
173	Identify the following surgical pathologies: traumatic injuries;	3.268	3.742
174	Apply principles of surgical microbiology to operative practice: classification and pathogenesis of microorganisms (e.g., cultures, pelvic washings, etc.);	2.819	3.325
175	Apply principles of surgical microbiology to operative practice: infection control procedures (e.g., aseptic technique);	4.653	4.678
176	Apply principles of surgical microbiology to operative practice: principles of tissue handling (e.g., Halsted principles, tissue manipulation methods, traction/counter traction);	3.968	4.149

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Task Statements		Frequency	Importance
177	Apply principles of surgical microbiology to operative practice: stages of, and factors influencing wound healing (e.g., condition of patient, wound type);	3.294	3.643
178	Apply principles of surgical microbiology to operative practice: surgical wound classification.	3.153	3.532
179	Identify and address factors that can influence an infectious process.	3.453	3.874
180	Apply principles of surgical pharmacology to operative practice: anesthesia related agents and medications;	2.518	3.129
181	Apply principles of surgical pharmacology to operative practice: blood and fluid replacement;	2.263	3.060
182	Apply principles of surgical pharmacology to operative practice: complications from drug interactions (e.g., malignant hyperthermia);	2.334	3.932
183	Apply principles of surgical pharmacology to operative practice: methods of anesthesia administration (e.g., general, local, block, MAC);	3.300	3.707
184	Apply principles of surgical pharmacology to operative practice: types, uses, action, and interactions of drugs and solutions (e.g., hemostatic agents, antibiotics, IV solutions);	3.198	3.748
185	Apply principles of surgical pharmacology to operative practice: weights, measures, and conversions.	2.582	3.184
186	Maintain awareness of maximum dosage (e.g., xylocaine, marcaine, heparin, epinephrine).	3.269	3.862

The survey included demographic questions regarding professional characteristics relevant to the job role. Table 2 shows a summary of the demographic questions in the survey.

Table 2.

Results of the Demographic Questions in the Job Analysis Survey.

1. Indicate the location of facility or organization in which you work.	*n*	%
Alabama	31	1.16%
Alaska	7	0.26%
Arizona	42	1.58%
Arkansas	29	1.09%
California	142	5.33%
Colorado	57	2.14%
Connecticut	25	0.94%
Delaware	3	0.11%
District of Columbia	1	0.04%
Florida	170	6.38%
Georgia	87	3.27%
Hawaii	6	0.23%
Idaho	26	0.98%
Illinois	70	2.63%
Indiana	99	3.72%
Iowa	24	0.90%
Kansas	24	0.90%

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1. Indicate the location of facility or organization in which you work.	*n*	%
Kentucky	53	1.99%
Louisiana	44	1.65%
Maine	19	0.71%
Maryland	36	1.35%
Massachusetts	64	2.40%
Michigan	79	2.97%
Minnesota	81	3.04%
Mississippi	24	0.90%
Missouri	39	1.46%
Montana	25	0.94%
Nebraska	20	0.75%
Nevada	26	0.98%
New Hampshire	17	0.64%
New Jersey	42	1.58%
New Mexico	10	0.38%
New York	122	4.58%
North Carolina	89	3.34%
North Dakota	17	0.64%
Ohio	134	5.03%
Oklahoma	43	1.61%
Oregon	36	1.35%
Pennsylvania	86	3.23%
Retired	2	0.08%
Rhode Island	6	0.23%
South Carolina	75	2.82%
South Dakota	14	0.53%
Tennessee	87	3.27%
Texas	265	9.95%
Utah	31	1.16%
Vermont	3	0.11%
Virginia	44	1.65%
Washington	56	2.10%
West Virginia	18	0.68%
Wisconsin	75	2.82%
Wyoming	6	0.23%
Other	32	1.20%

2. Indicate your primary place of employment.	*n*	%
Academic institution	225	8.33%
Ambulatory care center	322	11.92%
Hospital/Healthcare institution	1825	67.54%
Medical/surgical sales company	10	0.37%
Military/Government	16	0.59%
Physician practice	79	2.92%
Self-employed	5	0.19%
Specialty hospital	41	1.52%
Traveling staffing agency	107	3.96%
Not employed	33	1.22%
Other	39	1.44%

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3. Indicate the number of years you have worked as a surgical technologist.	n	%
< 1 Year	169	6.25%
1 - 5 years	679	25.12%
6 - 10 years	550	20.35%
11 - 15 years	417	15.43%
16 - 20 years	293	10.84%

4. Indicate the number of years you have held the CST credential.	n	%
< 1 Year	197	7.33%
1 - 5 years	768	28.56%
6 - 10 years	639	23.76%
11 - 15 years	442	16.44%
16 - 20 years	227	8.44%

5. Do you currently hold the CSFA credential?	n	%
Yes	141	5.21%
No	2567	94.79%

5a. Indicate the number of years you have held the CSFA credential.	n	%
< 1 Year	20	15.75%
1 - 5 years	48	37.80%
6 - 10 years	21	16.54%
11 - 15 years	14	11.02%
16 - 20 years	8	6.30%
> 20 years	16	12.60%

6. Which of these additional credentials do you hold? (select all that apply)	n	%
CHL	12	0.50%
CNOR	12	0.50%
CORST (NHA)	2	0.08%
CRCST	186	7.75%
CRNFA	2	0.08%
CSPDT	28	1.17%
LPN/LVN	32	1.33%
PA-C	1	0.04%
RN	50	2.08%
TS-C	14	0.58%
None	1876	78.13%
Other	186	7.75%

7. Do you serve solely in the role of the circulator as part of your job responsibilities?	n	%
Yes	2622	97.40%
No	69	2.60%

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8. Do part of your job responsibilities include circulating?	n	%
Yes	868	32.30%
No	1817	67.70%

9. Please indicate your primary responsibility/job title.	n	%
Catheterization Laboratory	1	0.04%
Clinical Coordinator	40	1.50%
Clinical Specialist	15	0.56%
Endoscopy Center	24	0.90%
First/Second Scrub	1708	64.02%
First Assistant	96	3.60%
Labor/Delivery	146	5.47%
Materials Management	22	0.82%
Operating Room Manager	5	0.19%
Operating Room Liaison	12	0.45%
Peri-Operative Educator	5	0.19%
Procurement	3	0.11%
Program Director/Instructor	59	2.21%
Sales Representative	2	0.07%
ST Educator	65	2.44%
Sterile Processing	37	1.39%
Surgical Support Services	102	3.82%
Team Leader	75	2.81%
Other	251	9.41%

10. Indicate the surgical specialties in which you work. (select all that apply)	n	%
Bariatrics	781	28.98%
Cardiovascular - Thoracic	517	19.18%
Cath lab	79	2.93%
Colorectal	1050	38.96%
Dental	542	20.11%
Dermatological	231	8.57%
Endoscopy	830	30.80%
Endoscopic vein harvesting	158	5.86%
Endovascular	526	19.52%
ENT	1463	54.29%
General surgery	1962	72.80%
Genitourinary	1179	43.75%
Labor and Delivery	725	26.90%
Neurosurgery	967	35.88%
OB/GYN	1552	57.59%
Ophthalmology	807	29.94%
Oral/maxillofacial	854	31.69%
Organ Procurement	607	22.52%
Orthopaedic & Spine	1234	45.79%
Orthopedics	1765	65.49%
Pain	514	19.07%

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10. Indicate the surgical specialties in which you work. (select all that apply)	n	%
Pediatrics	616	22.86%
Peripheral vascular	771	28.61%
Plastic/reconstructive	1422	52.76%
Podiatry	1370	50.83%
Robotics	1091	40.48%
Tissue/Organ transplantation	319	11.84%
Thoracic	600	22.26%
Trauma	985	36.55%
Other	97	3.60%

11. Indicate your highest level of education you have completed.	n	%
High school diploma or equivalency diploma	36	1.34%
College/vocational certificate/diploma	636	23.74%
Some college	230	8.59%
Associate degree	1293	48.26%
Bachelor's degree	396	14.78%
Master's degree	68	2.54%
Doctoral degree	16	0.60%
Other	4	0.15%

12. Indicate the type of training you have received in surgical technology. (select all that apply)	n	%
Associate degree in surgical first assisting	66	2.45%
On-the-job	427	15.84%
Military	90	3.34%
Certificate/Diploma - Surgical Technologist	1522	56.47%
Associate Degree - Surgical Technologist	1332	49.42%

13. Does your employer require certification as a CST as condition of employment?	n	%
Yes	1811	67.35%
No	878	32.65%

14. Is verification of your CST credential part of your annual review?	n	%
Yes	1860	69.33%
No	823	30.67%

15. Did your compensation increase after being certified as a CST?	n	%
Yes	1240	46.20%
No	1444	53.80%

16. Does your employer incorporate certification into a clinical ladder system?	n	%
Yes	909	33.92%
No	1771	66.08%

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Development of Exam Specifications

The Job Analysis Committee met on August 21, 2022 to review the results of the survey, finalize the tasks that would comprise the next Examination Content Outline, and finalize the content weighting for the examination.

The committee reviewed the demographic results and confirmed that the results matched expectations and impressions of the practitioner population, suggesting that the respondent sample is reflective of the target population.

All tasks were reviewed by the committee for frequency and importance ratings. Criticality values (mean importance rating multiplied by the mean frequency rating) were used to evaluate the appropriateness of inclusion of the task statement. Tasks that fell below a threshold (7.5) were flagged for the committee to review and act upon. Table 3 displays the tasks that were reviewed and resulting decision.

Table 3.

Task List Changes.

		Committee Decision	Reason
7	Check temperature of blanket and solution warmer and document appropriately.	Exclude	Criticality
8	Check laminar air flow before surgery.[3]	Exclude	Criticality
9	Obtain extra SCD's Case Carts, OB and CS Packs from Central Supply.[4]	Exclude	Not Appropriate
13	Setup secondary mayo stand to eliminate cross-contamination.[4]	Exclude	Not Appropriate
20	Transport the patient to operating room.	Exclude	Criticality
23	Apply patient monitoring devices as directed.	Exclude	Criticality
27	Exsanguinate the extremity.	Exclude	Criticality
40	Assist as surgeon extracts foreign body from rectum.	Exclude	Criticality
46	Assemble, test, operate, and disassemble specialty equipment: computer navigation systems.	Exclude	Criticality
47	Assemble, test, operate, and disassemble specialty equipment: thermal technology.	Exclude	Criticality
48	Assemble, test, operate, and disassemble specialty equipment: laser technology (e.g., helium, argon, CO2 beam coagulators).	Exclude	Criticality
52	Assemble, test, operate, and disassemble specialty equipment: robotic technology	Include	Emerging Technology
65	Take specimens to the pathology lab for processing.	Exclude	Criticality
73	Assist in robotic operations as directed: Assist surgeon in properly placing the robotic and non-robotic trocars, as needed.	Exclude	Criticality

[3] Task was removed at an ad hoc meeting on January 28, 2023. Laminar air flow was added as an example to preceding surviving task.

[4] Task was removed at an ad hoc meeting on January 28, 2023.

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		Committee Decision	Reason
74	Assist in robotic operations as directed: Guide robot into the sterile field, then dock the robot.	Exclude	Criticality
75	Assist in robotic operations as directed: Place proper instruments in the correct arm of the robot.	Exclude	Criticality
76	Assist in robotic operations as directed: Pass needles and clips through the assistant port to surgeon.	Exclude	Criticality
77	Assist in robotic operations as directed: Exchange robotic instruments as per surgeon's request.	Exclude	Criticality
90	Remove robotic instruments; undock then guide the robot away from the sterile field.	Exclude	Criticality
91	Terminal cleaning.	Exclude	Criticality
96	Make baby warmer with linen.	Exclude	Criticality
97	Attach baby suction with tubing to wall.	Exclude	Criticality
98	Attach O2 for baby to wall.	Exclude	Criticality
99	Attach anesthesia suction and tubing to wall, connect suction tip and place accordingly.	Exclude	Criticality
100	Re-wrap and organize monitor wires with leads on the EKG wires.	Exclude	Criticality
102	Wipe down any surface housekeeping is not allowed to touch with a chemical wipe (e.g., ESU, baby warmer, anesthesia machine, computers, etc.).[4]	Exclude	Criticality
103	Wash and re-make recovery beds after the patient gets discharged. Place into recovery room.	Exclude	Criticality
112	Utilize computer technology for: surgeon's preference cards.	Exclude	Criticality
113	Utilize computer technology for: interdepartmental communication.	Exclude	Not CST Specific
114	Utilize computer technology for: continuing education.	Exclude	Not CST Specific
115	Utilize computer technology for: research.	Exclude	Criticality
123	Participate in organ and tissue procurement.	Exclude	Criticality
126	Pick up and release patients from ER.	Exclude	Criticality
127	Precept student techs as needed per service line.	Exclude	Combined w/ Task 124
128	Order supplies as needed.	Exclude	Criticality
133	Prepare single use devices for outsourced reprocessing.	Exclude	Criticality
136	Sterilize instruments and document results for immediate use items (e.g., short cycle).	Exclude	Criticality
137	Package and sterilize instruments and equipment.	Exclude	Criticality
139	Set up and utilize instrument tracking system(s).	Exclude	Criticality
157	Demonstrate knowledge of human physiology as they relate to the surgical procedure: endocrine	Include	Important to A&P System
181	Apply principles of surgical pharmacology to operative practice: blood and fluid replacement.	Exclude	Criticality

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The committee then reviewed the draft content weighting, discussing any adjustments necessary to align the number of items per content area for adequate content coverage on the 150-item assessment. The draft content weighting was guided and developed by three sources 1) calculating the criticality value (mean importance rating multiplied by the mean frequency rating) and then determining a percentage weight based on the relative weight of the criticality value for each content area 2) survey responses on percent allocation to the three major domains and 3) committee judgement. The committee also considered complexities in the job role faced within each of the three major domains and provided individual judgements for the distribution of items classified as either recall or application (i.e., secondary classifications).

See Table 4 for a summary of the criticality values and weight. Table 5 contains respondent source information and Table 6 contains committee source information. The final Examination Content Outline can be found in Appendix E.

Table 4.

Criticality Values and Weight.

Task Statements			Criticality	Percentage	Items
1	1A	Review surgeon's preference card.	18.26	0.77%	1.15
2	1A	Verify availability of surgery equipment (e.g., reserve equipment for surgery).	18.21	0.77%	1.15
3	1A	Don personal protective equipment.	23.38	0.98%	1.48
4	1A	Utilize preoperative documentation (e.g., informed consent, advanced directives, allergies, laboratory results).	9.83	0.41%	0.62
5	1A	Consider patient needs (e.g., bariatrics, geriatrics, pediatrics, immunocompromised, patient allergies).	17.71	0.74%	1.12
6	1A	Prepare the operating room environment (e.g., temperature, humidity, lights, suction, wiping down the room and furniture, managing OR traffic patterns).	18.45	0.78%	1.16
7	1A	Check temperature of blanket and solution warmer and document appropriately.	5.77	0.24%	0.36
8	1A	Check laminar air flow before surgery.	4.11	0.17%	0.26
9	1A	Obtain extra SCD's Case Carts, OB and CS Packs from Central Supply.	8.36	0.35%	0.53
10	1A	Coordinate additional equipment (e.g., bovie pad, pneumatic tourniquet, sequential compression devices, thermoregulatory devices, positioning devices).	13.43	0.57%	0.85
11	1A	Obtain and inspect instruments and supplies needed for surgery.	21.67	0.91%	1.37
12	1A	Drape Mayo stand and reinforce with towels	20.56	0.86%	1.30
13	1A	Setup secondary mayo stand to eliminate cross-contamination.	10.43	0.44%	0.66
14	1A	Perform basic hand wash.	23.03	0.97%	1.45
15	1A	Check packages for sterile integrity and expiration indicators	23.69	1.00%	1.49

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Task Statements			Criticality	Percentage	Items
16	1A	Open sterile supplies/instruments while maintaining aseptic technique.	23.84	1.00%	1.50
17	1A	Perform surgical scrub (e.g., initial, waterless).	23.14	0.97%	1.46
18	1A	Don gown and gloves.	23.46	0.99%	1.48
19	1A	Assemble and set up sterile instruments and supplies for surgical procedures.	21.90	0.92%	1.38
20	1A	Transport the patient to operating room.	2.50	0.11%	0.16
21	1A	Transfer patient to operating room table.	13.18	0.55%	0.83
22	1A	Apply patient safety devices (e.g., bovie pad, safety strap, protective padding, x-ray safety).	12.70	0.53%	0.80
23	1A	Apply patient monitoring devices as directed.	7.24	0.30%	0.46
24	1A	Apply compression hose and / or sequential compression devices.	9.25	0.39%	0.58
25	1A	Participate in positioning the patient.	13.90	0.58%	0.88
26	1A	Prepare surgical site (e.g., hair removal, surgical preparation).	7.78	0.33%	0.49
27	1A	Exsanguinate the extremity	4.74	0.20%	0.30
28	1A	Gown and glove sterile team members.	21.84	0.92%	1.38
29	1A	Participate in draping the patient.	21.61	0.91%	1.36
30	1A	Secure cords/tubing to drapes and apply light handles.	20.90	0.88%	1.32
31	1A	Drape specialty equipment (e.g., c-arm, robot, microscope).	18.08	0.76%	1.14
32	1A	Participate in Universal Protocol (Time Out).	23.41	0.98%	1.48
33	1B	Maintain aseptic technique throughout the procedure (e.g., handling breaks in sterile technique)	23.53	0.99%	1.48
34	1B	Follow Standard and Universal Precautions	23.69	1.00%	1.49
35	1B	Anticipate the steps of surgical procedures	22.43	0.94%	1.42
36	1B	Perform counts with circulator at appropriate intervals	22.45	0.94%	1.42
37	1B	Prepare hemostatic agents (e.g. Flow seal, Arista or Surgicel, etc.)	16.94	0.71%	1.07
38	1B	Verify, receive, mix, and label all medications and solutions	21.96	0.92%	1.39
39	1B	Provide intraoperative assistance under the direction of the surgeon	20.58	0.87%	1.30
40	1B	Assist as surgeon extracts foreign body from rectum	6.39	0.27%	0.40
41	1B	Identify different types of operative incisions	10.46	0.44%	0.66
42	1B	Identify instruments by: function	19.64	0.83%	1.24
43	1B	Identify instruments by: application	18.17	0.76%	1.15
44	1B	Identify instruments by: classification	15.53	0.65%	0.98
45	1B	Assemble, test, operate, and disassemble specialty equipment: microscopes	11.97	0.50%	0.76
46	1B	Assemble, test, operate, and disassemble specialty equipment: computer navigation systems	6.41	0.27%	0.40

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Task Statements			Criticality	Percentage	Items
47	1B	Assemble, test, operate, and disassemble specialty equipment: thermal technology	6.56	0.28%	0.41
48	1B	Assemble, test, operate, and disassemble specialty equipment: laser technology (e.g., helium, argon, CO2 beam coagulators)	7.48	0.31%	0.47
49	1B	Assemble, test, operate, and disassemble specialty equipment: ultrasound technology (e.g., harmonic scalpel, phacoemulsification)	11.19	0.47%	0.71
50	1B	Assemble, test, operate, and disassemble specialty equipment: endoscopic technology	10.72	0.45%	0.68
51	1B	Assemble, test, operate, and disassemble specialty equipment: power equipment	15.03	0.63%	0.95
52	1B	Assemble, test, operate, and disassemble specialty equipment: robotic technology	7.48	0.31%	0.47
53	1B	Assemble and maintain retractors	16.27	0.68%	1.03
54	1B	Perform 2nd scrub role (e.g., hold retractors / scopes during case)	15.51	0.65%	0.98
55	1B	Pass instruments and supplies	22.52	0.95%	1.42
56	1B	Identify appropriate usage of sutures/needles and stapling devices	20.53	0.86%	1.30
57	1B	Prepare, pass, and cut suture material as directed	21.66	0.91%	1.37
58	1B	Provide assistance with stapling devices	14.89	0.63%	0.94
59	1B	Differentiate among the various methods and applications of hemostasis (e.g., mechanical, thermal, chemical)	14.66	0.62%	0.92
60	1B	Irrigate, suction, and sponge operative site as directed	19.42	0.82%	1.23
61	1B	Monitor medication and solution use	18.58	0.78%	1.17
62	1B	Verify with surgeon the correct type and/or size of specialty specific implantable items	18.89	0.79%	1.19
63	1B	Prepare bone and tissue grafts (e.g., allograft, autograft, synthetic)	12.78	0.54%	0.81
64	1B	Verify, prepare, and label specimen(s)	20.38	0.86%	1.29
65	1B	Take specimens to the pathology lab for processing	4.92	0.21%	0.31
66	1B	Prepare drains, catheters, and tubing for insertion	14.44	0.61%	0.91
67	1B	Observe patient's intraoperative status (e.g., monitor color of blood, blood loss, patient position)	11.70	0.49%	0.74
68	1B	Perform appropriate actions during an emergency	16.25	0.68%	1.03
69	1B	Initiate preventative actions in potentially harmful situations	15.73	0.66%	0.99
70	1B	Connect and activate drains to suction apparatus	13.38	0.56%	0.84
71	1B	Prepare dressings and wound site	18.71	0.79%	1.18
72	1B	Assist in the application of casts, splints, braces, and similar devices	9.70	0.41%	0.61
73	1B	Assist in robotic operations as directed: Assist surgeon in properly placing the robotic and non-robotic trocars, as needed;	5.05	0.21%	0.32

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Task Statements			Criticality	Percentage	Items
74	1B	Assist in robotic operations as directed: Guide robot into the sterile field, then dock the robot;	3.48	0.15%	0.22
75	1B	Assist in robotic operations as directed: Place proper instruments in the correct arm of the robot;	5.74	0.24%	0.36
76	1B	Assist in robotic operations as directed: Pass needles and clips through the assistant port to surgeon;	5.21	0.22%	0.33
77	1B	Assist in robotic operations as directed: Exchange robotic instruments as per surgeon's request	5.77	0.24%	0.36
78	1C	Report medication and solution amount used.	19.75	0.83%	1.25
79	1C	Report quantitative blood loss.	8.35	0.35%	0.53
80	1C	Participate in case debrief.	9.46	0.40%	0.60
81	1C	Remove drapes and other equipment (e.g., suction, cautery, instrumentation, nondisposable items) from patient.	19.97	0.84%	1.26
82	1C	Assist with removing any positioning devices.	15.53	0.65%	0.98
83	1C	Assist in postoperative cleaning of patient (prior to transfer of patient to the recovery bed).	17.45	0.73%	1.10
84	1C	Report abnormal postoperative findings (e.g., bleeding at surgical site, hematoma, rash).	13.21	0.56%	0.83
85	1C	Dispose of contaminated waste and drapes after surgery in compliance with Standard Precautions.	21.01	0.88%	1.33
86	1C	Transfer patient from operating table to stretcher.	18.83	0.79%	1.19
87	1C	Dispose of contaminated sharps and/or sharps container after surgery in compliance with Standard Precautions.	22.60	0.95%	1.43
88	1C	Perform room clean up and restock supplies.	17.21	0.72%	1.09
89	1C	Remove all unused supplies and return to their appropriate storage location.	16.75	0.70%	1.06
90	1C	Remove robotic instruments; undock then guide the robot away from the sterile field.	4.56	0.19%	0.29
91	1C	Terminal cleaning.	5.84	0.25%	0.37
92	1C	Reset OR once environmental disinfection has taken place. Including: Making OR bed with linen;	11.95	0.50%	0.75
93	1C	Reset OR once environmental disinfection has taken place. Including: Re-applying arms to OR bed;	11.40	0.48%	0.72
94	1C	Reset OR once environmental disinfection has taken place. Including: Connecting suction and tubing to the wall;	8.70	0.37%	0.55
95	1C	Reset OR once environmental disinfection has taken place. Including: Laying out all supplies for next case;	18.59	0.78%	1.17
96	1C	Reset OR once environmental disinfection has taken place. Including: Make baby warmer with linen;	2.37	0.10%	0.15
97	1C	Reset OR once environmental disinfection has taken place. Including: Attach baby suction with tubing to wall;	1.97	0.08%	0.12
98	1C	Reset OR once environmental disinfection has taken place. Including: Attach O2 for baby to wall;	1.84	0.08%	0.12

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Task Statements			Criticality	Percentage	Items
99	1C	Reset OR once environmental disinfection has taken place. Including: Attach anesthesia suction and tubing to wall, connect suction tip and place accordingly;	3.78	0.16%	0.24
100	1C	Reset OR once environmental disinfection has taken place. Including: Re-wrap and organize monitor wires with leads on the EKG wires;	3.30	0.14%	0.21
101	1C	Reset OR once environmental disinfection has taken place. Including: Position equipment as needed in preparation for next case.	15.05	0.63%	0.95
102	1C	Wipe down any surface housekeeping is not allowed to touch with a chemical wipe (e.g., ESU, baby warmer, anesthesia machine, computers, etc.)	11.90	0.50%	0.75
103	1C	Wash and re-make recovery beds after the patient gets discharged. Place into recovery room.	1.47	0.06%	0.09
104	1C	Clean and wipe consoles as needed.	9.04	0.38%	0.57
105	1C	Assist with inventory of sterile supplies; verify expiration dates.	13.45	0.57%	0.85
106	1C	Mentoring new or traveling perioperative personnel.	12.79	0.54%	0.81
107	1C	Dock suction apparatus for cleaning.	8.64	0.36%	0.55
108	1C	Re-stock and organize each OR at end of day to ensure that all required minimum items are in the room and turn off lights.	13.17	0.55%	0.83
109	2A	Revise surgeon's preference card as necessary.	12.72	0.54%	0.80
110	2A	Follow proper cost containment processes.	8.26	0.35%	0.52
111	2A	Create, maintain, and utilize preference cards for each surgeon.	11.82	0.50%	0.75
112	2A	Utilize computer technology for: surgeon's preference cards;	7.30	0.31%	0.46
113	2A	Utilize computer technology for: interdepartmental communication;	10.62	0.45%	0.67
114	2A	Utilize computer technology for: continuing education;	15.47	0.65%	0.98
115	2A	Utilize computer technology for: research.	5.03	0.21%	0.32
116	2A	Follow hospital and national disaster plan protocol.	11.67	0.49%	0.74
117	2A	Recognize safety and environmental hazards (e.g., fire, chemical spill, laser, smoke).	15.56	0.65%	0.98
118	2A	Apply basic principles of electricity and electrical safety.	16.29	0.69%	1.03
119	2A	Apply ethical and legal practices related to surgical patient care.	18.63	0.78%	1.18
120	2A	Use interpersonal skills (e.g., listening, diplomacy, responsiveness, conflict resolution) and group dynamics.	19.12	0.80%	1.21
121	2A	Apply the importance of cultural diversity.	16.19	0.68%	1.02
122	2A	Demonstrates knowledge of concepts of death and dying.	10.53	0.44%	0.66
123	2A	Participate in organ and tissue procurement.	4.30	0.18%	0.27

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Task Statements			Criticality	Percentage	Items
124	2A	Serve as preceptor to perioperative personnel.	12.40	0.52%	0.78
125	2A	Provide assistance as needed to other OR rooms.	16.06	0.68%	1.01
126	2A	Pick up and release patients from ER.	0.62	0.03%	0.04
127	2A	Precept student techs as needed per service line.	11.57	0.49%	0.73
128	2A	Order supplies as needed.	4.62	0.19%	0.29
129	2B	Troubleshoot equipment malfunctions.	12.33	0.52%	0.78
130	2B	Decontaminate and clean instruments and equipment.	10.66	0.45%	0.67
131	2B	Pre-clean instruments using enzymatic cleaner.	17.89	0.75%	1.13
132	2B	Separate all instruments and put them in basin with water.	12.04	0.51%	0.76
133	2B	Prepare single use devices for outsourced reprocessing .	7.11	0.30%	0.45
134	2B	Take dirty instruments and equipment to Central Supply.	16.76	0.71%	1.06
135	2B	Inspect, test, and assemble instruments and equipment.	14.63	0.62%	0.92
136	2B	Sterilize instruments and document results for immediate use items (e.g., short cycle).	4.84	0.20%	0.31
137	2B	Package and sterilize instruments and equipment.	4.37	0.18%	0.28
138	2B	Interpret and understand chemical and biological indicators.	16.79	0.71%	1.06
139	2B	Set up and utilize instrument tracking system(s).	3.18	0.13%	0.20
140	2B	Restock left over supplies and instruments.	12.40	0.52%	0.78
141	3A	Use appropriate medical terminology and abbreviations.	18.74	0.79%	1.18
142	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: cardiovascular	11.03	0.46%	0.70
143	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: endocrine	7.81	0.33%	0.49
144	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: gastrointestinal	12.76	0.54%	0.81
145	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: genitourinary	12.01	0.51%	0.76
146	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: integumentary	10.76	0.45%	0.68
147	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: lymphatic	9.12	0.38%	0.58
148	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: muscular	13.61	0.57%	0.86
149	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: neurological	9.72	0.41%	0.61
150	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: ophthalmic	7.78	0.33%	0.49

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Task Statements			Criticality	Percentage	Items
151	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: otorhinolaryngology	9.24	0.39%	0.58
152	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: peripheral vascular	10.16	0.43%	0.64
153	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: pulmonary	8.48	0.36%	0.54
154	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: reproductive	11.86	0.50%	0.75
155	3A	Demonstrate knowledge of anatomical systems as they relate to the surgical procedure: skeletal	14.05	0.59%	0.89
156	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: cardiovascular	9.66	0.41%	0.61
157	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: endocrine	7.36	0.31%	0.46
158	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: gastrointestinal	11.40	0.48%	0.72
159	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: genitourinary	10.85	0.46%	0.68
160	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: integumentary	9.90	0.42%	0.62
161	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: lymphatic	8.38	0.35%	0.53
162	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: muscular	12.75	0.54%	0.80
163	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: neurological	9.35	0.39%	0.59
164	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: ophthalmic	7.55	0.32%	0.48
165	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: otorhinolaryngology	8.53	0.36%	0.54
166	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: peripheral vascular	9.36	0.39%	0.59
167	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: pulmonary	8.20	0.34%	0.52
168	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: reproductive	10.98	0.46%	0.69
169	3A	Demonstrate knowledge of human physiology as they relate to the surgical procedure: skeletal	12.91	0.54%	0.81
170	3A	Identify the following surgical pathologies: abnormal anatomy;	13.24	0.56%	0.84
171	3A	Identify the following surgical pathologies: disease processes;	10.86	0.46%	0.68

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Task Statements			Criticality	Percentage	Items
172	3A	Identify the following surgical pathologies: malignancies;	10.71	0.45%	0.68
173	3A	Identify the following surgical pathologies: traumatic injuries;	12.23	0.51%	0.77
174	3B	Apply principles of surgical microbiology to operative practice: classification and pathogenesis of microorganisms (e.g., cultures, pelvic washings, etc.);	9.37	0.39%	0.59
175	3B	Apply principles of surgical microbiology to operative practice: infection control procedures (e.g., aseptic technique);	21.77	0.92%	1.37
176	3B	Apply principles of surgical microbiology to operative practice: principles of tissue handling (e.g., Halsted principles, tissue manipulation methods, traction/counter traction);	16.46	0.69%	1.04
177	3B	Apply principles of surgical microbiology to operative practice: stages of, and factors influencing wound healing (e.g., condition of patient, wound type);	12.00	0.50%	0.76
178	3B	Apply principles of surgical microbiology to operative practice: surgical wound classification.	11.14	0.47%	0.70
179	3B	Identify and address factors that can influence an infectious process.	13.38	0.56%	0.84
180	3C	Apply principles of surgical pharmacology to operative practice: anesthesia related agents and medications;	7.88	0.33%	0.50
181	3C	Apply principles of surgical pharmacology to operative practice: blood and fluid replacement;	6.92	0.29%	0.44
182	3C	Apply principles of surgical pharmacology to operative practice: complications from drug interactions (e.g., malignant hyperthermia);	9.18	0.39%	0.58
183	3C	Apply principles of surgical pharmacology to operative practice: methods of anesthesia administration (e.g., general, local, block, MAC);	12.23	0.51%	0.77
184	3C	Apply principles of surgical pharmacology to operative practice: types, uses, action, and interactions of drugs and solutions (e.g., hemostatic agents, antibiotics, IV solutions);	11.99	0.50%	0.76
185	3C	Apply principles of surgical pharmacology to operative practice: weights, measures, and conversions.	8.22	0.35%	0.52
186	3C	Maintain awareness of maximum dosage (e.g., xylocaine, marcaine, heparin, epinephrine).	12.63	0.53%	0.80

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Table 5.

Survey Respondent Mean Content Allocation.

	n	Mean (%)
1. Perioperative Care	834	55.0%
2. Ancillary Duties	832	18.3%
3. Basic Science	833	26.7%

Table 6.

Committee Judgement.

Domain	Committee Weight	# Items	Recall	Application
1. Perioperative Care	**65%**	**97**	**29%**	**71%**
A. Preoperative Preparation	20%	19		
B. Intraoperative Procedures	70%	68		
C. Postoperative Procedures	10%	10		
2. Ancillary Duties	**15%**	**23**	**43%**	**57%**
A. Administrative and Personnel	30%	7		
B. Equipment Sterilization and Maintenance	70%	16		
3. Basic Science	**20%**	**30**	**77%**	**23%**
A. Anatomy and Physiology	60%	18		
B. Microbiology	20%	6		
C. Surgical Pharmacology	20%	6		

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