Commission on Accreditation of Allied Health Education Programs

Standards and Guidelines
for the Accreditation of Educational Programs for the Anesthesiologist Assistant

Essentials/Standards initially adopted
June 1987; revised in 2000, 2001, 2004, 2009, 2016

Adopted by the
American Academy of Anesthesiologist Assistants
American Society of Anesthesiologists
Accreditation Review Committee for the Anesthesiologist Assistant
and
Commission on Accreditation of Allied Health Education Programs

The Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredits programs upon the recommendation of the Accreditation Review Committee for the Anesthesiologist Assistant.

These accreditation **Standards and Guidelines** are the minimum standards of quality used in accrediting programs that prepare individuals to enter the Anesthesiologist Assistant profession. Standards are the minimum requirements to which an accredited program is held accountable. Guidelines are descriptions, examples, or recommendations that elaborate on the Standards. Guidelines are not required, but can assist with interpretation of the Standards.

Standards are printed in regular typeface in outline form. *Guidelines* are printed in italic typeface in narrative form.

Preamble

The Commission on Accreditation of Allied Health Education Programs (CAAHEP), the Accreditation Review Committee for the Anesthesiologist Assistant (ARC-AA), the American Academy of Anesthesiologist Assistants (AAAA), and the American Society of Anesthesiologists (ASA) cooperate to establish, maintain, and promote appropriate standards of quality for educational programs for Anesthesiologist Assistants and to provide recognition of educational programs that meet or exceed the minimum standards outlined in these accreditation **Standards and Guidelines**. Lists of accredited programs are published for the information of students, employers, educational institutions and agencies, and the public.

These **Standards and Guidelines** are to be used for the development, evaluation, and self-analysis of Anesthesiologist Assistant programs. On-site review teams assist in the evaluation of the program's relative compliance with the accreditation Standards.

Description of the Profession

The Anesthesiologist Assistant (AA) is qualified by academic and clinical education to provide anesthetic care under the direction of a qualified physician anesthesiologist. The physician anesthesiologist who is responsible for the Anesthesiologist Assistant is available to prescribe and direct particular therapeutic interventions.

By virtue of the basic medical science education and clinical practice experience, the Anesthesiologist Assistant is proficient in the use of contemporary patient monitoring and interpretation of data in all anesthesia care environments. The Anesthesiologist Assistant provides patient care that allows the supervising physician anesthesiologist to use his or her own medical education more efficiently and effectively.

The Anesthesiologist Assistant is prepared to gather patient data, perform patient evaluation, and to administer and document the therapeutic plan that has been formulated for the anesthetic care of the patient. The tasks performed by AAs reflect regional variations in anesthesia practice and state regulatory factors.

Under the direction of a physician anesthesiologist, in agreement with the ASA Statement on the Anesthesia Care Team (ACT) and in accordance with the AAAA Statement on the ACT, the Anesthesiologist Assistant's functions include, but are not limited to, the following:

a. Obtain an appropriate and accurate preanesthetic health history, perform an appropriate physical examination, and record pertinent data in an organized and legible manner;

b. Obtain diagnostic laboratory and related studies as appropriate, such as drawing arterial and venous blood samples and any other necessary patient fluids;

c. Insert and interpret data from invasive monitoring modalities such as arterial lines, pulmonary artery catheterization, and central venous lines, as delegated by the supervising physician anesthesiologist;

d. Administer anesthetic agents and controlled substances under the direction of a supervising physician anesthesiologist. This includes, but not limited to, administration of induction agents, maintaining and altering anesthesia levels, administering adjunctive treatment and providing continuity of anesthetic care into and during the post-operative recovery period;

e. Establish and maintain appropriate airway management and provide appropriate ventilatory support;

f. Apply and interpret advanced monitoring techniques;

g. Make post-anesthesia patient rounds by recording patient progress notes, compiling and recording case summaries, and by transcribing standing and specific orders;

h. Evaluate and treat life-threatening situations, such as cardiopulmonary resuscitation, on the basis of established protocols (BLS, ACLS, and PALS);

i. Perform duties in intensive care units, pain clinics, and other settings, as appropriate;

j. Train and supervise personnel in the calibration, troubleshooting, and use of patient monitors;

k. Perform administrative duties in an anesthesiology practice or anesthesiology department, including management of personnel;

l. Participate in the clinical instruction of others; and

m. Perform and monitor regional anesthesia to include, but not limited to, spinal, epidural, IV regional, and other special techniques such as local infiltration and nerve blocks.

I. Sponsorship

A. Sponsoring Education Institution

A sponsoring institution must be at least one of the following:

1. a post-secondary academic institution accredited by an institutional accrediting agency that is recognized by the U.S. Department of Education, and must be authorized under applicable law or other acceptable authority to provide a post-secondary program, which awards a minimum of a master's degree at the completion of the program.

   The Anesthesiologist Assistant program must be supported by a Liaison Committee on Medical Education (LCME) accredited school of medicine, or its successor, or supported by an American Osteopathic Association's Commission on Osteopathic College accredited school of medicine, or its successor. The anesthesiology

department jointly with the Anesthesiologist Assistant program must have the educational resources internally or through educational affiliates that would qualify it to meet the criteria of the Accreditation Council for Graduate Medical Education (ACGME), or its successor, for sponsorship of an anesthesiology residency program.

2. a foreign post-secondary academic institution acceptable to CAAHEP that is authorized under applicable law or other acceptable authority to provide a post-secondary program, which awards a minimum of a master's degree or equivalent upon completion of the program.

B. Consortium Sponsor

1. A consortium sponsor is an entity consisting of two or more members that exists for the purpose of operating an educational program. In such instances, at least one of the members of the consortium must meet the requirements of a sponsoring educational institution as described in I.A.

2. The responsibilities of each member of the consortium must be clearly documented in a formal affiliation agreement or memorandum of understanding, which includes governance and lines of authority.

C. Responsibilities of Sponsor

The Sponsor must ensure that the provisions of these **Standards and Guidelines** are met.

II. Program Goals

A. Program Goals and Outcomes

There must be a written statement of the program's goals and learning domains consistent with and responsive to the demonstrated needs and expectations of the various communities of interest served by the educational program. The communities of interest that are served by the program must include, but are not limited to, students, graduates, faculty, sponsor administration, hospital administration, employers, physicians, and the public.

Program-specific statements of goals and learning domains provide the basis for program planning, implementation, and evaluation. Such goals and learning domains must be compatible with the mission of the sponsoring institution(s), the expectations of the communities of interest, and nationally accepted standards of roles and functions. Goals and learning domains are based upon the substantiated needs of health care providers and employers, and the educational needs of the students served by the educational program.

B. Appropriateness of Goals and Learning Domains

The program must regularly assess its goals and learning domains. Program personnel must identify and respond to changes in the needs and/or expectations of its communities of interest.

An advisory committee, which is representative of these communities of interest named in these **Standards**, must be designated and charged with the responsibility of meeting at least annually, to assist program and sponsor personnel in formulating and periodically revising appropriate goals and learning domains, monitoring needs and expectations, and ensuring program responsiveness to change.

Advisory committee meetings may include participation by synchronous electronic means.

C. Minimum Expectations

The program must have the following goal defining minimum expectations: "To prepare competent entry-level Anesthesiologist Assistants in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains."

Programs adopting educational goals beyond entry-level competence must clearly delineate this intent and provide evidence that all students have achieved the basic competencies prior to entry into the field.

Nothing in this standard restricts programs from formulating goals beyond entry-level competence.

III. Resources

A. Type and Amount

Program resources must be sufficient to ensure the achievement of the program's goals and outcomes. Resources must include, but are not limited to: faculty; clerical and support staff; curriculum; finances; offices; classroom, laboratory, and, ancillary student facilities; clinical affiliates; equipment; supplies; computer resources; instructional reference materials; and faculty/staff continuing education.

B. Personnel

The sponsor must appoint sufficient faculty and staff with the necessary qualifications to perform the functions identified in documented job descriptions and to achieve the program's stated goals and outcomes.

The program director must hold an academic appointment with the sponsoring institution. The medical director must hold either an administrative appointment or an academic appointment with the sponsoring institution.

1. Program Director

a. Responsibilities

The program director must assume or delegate the following responsibilities:

1) supervise those activities of the faculty and administrative staff that are in direct support of the Anesthesiologist Assistant program;
2) organize, administer, continuously review, plan, and develop processes that ensure general effectiveness of didactic education in the program;
3) ensure that continuous and competent educational guidance is provided through contact with all entities that participate in the education of the students;
4) ensure that continuous and competent medical guidance for the clinically related program components is provided, so that:
    a) supervised clinical instruction meets current standards of acceptable practice; and
    b) Anesthesiologist Assistant students learn, develop, and practice the knowledge and skills essential to successful professional interactions with physicians in the medical workplace;
5) ensure that continuous and competent educational guidance is provided, so that the didactic demands placed by the clinical educational environment are adequately addressed by classroom curriculum design.

b. Qualifications

The program director must:

1) be a certified Anesthesiologist Assistant;
2) hold a graduate degree in education, administration, medicine, or the medical basic sciences;
3) have the requisite knowledge and skills to administer the classroom/academic aspects of the program; and,
4) have the requisite knowledge and skills to administer the operation of the overall program.

The title of program director should not prevent a delegated division of duties or the involvement of educational or operational professionals. Delegated areas of responsibility, as defined by the program director, should exist in a clear organizational structure that facilitates timely review of problems, refinement of processes, and overall advancement of the educational mission of the program.

2. Medical Director

a. Responsibilities

The medical director must:

1) organize, administer, continuously review, plan, and develop processes that ensure general effectiveness of clinical education component of the program; and
2) Participate in teaching anesthesia practice and/or coursework focusing on principles of medicine.

b. Qualifications

The medical director must:

1) be a physician anesthesiologist currently licensed and board certified in anesthesiology; and
2) have the requisite knowledge and skills to administer the clinical/academic aspects of the program.

3. Faculty and Instructional Staff

a. Responsibilities

The instructional staff must be responsible for providing instruction, for evaluating students and reporting progress as required by the institution, and for periodically reviewing and updating course materials.

In each location where a student is assigned for didactic or supervised practice instruction, there must be a qualified individual designated to provide that supervision and related frequent assessments of the student's progress in achieving acceptable program requirements.

b. Qualifications

Faculty must be individually qualified by education and experience and must be effective in teaching the subjects assigned. Faculty for the supervised clinical practice portion of the educational program must include a physician alone or a physician with an Anesthesiologist Assistant or a physician with another non-physician anesthesia provider.

Resident physicians may contribute to clinical or didactic instruction. However, the physician faculty roster should be composed predominantly of board certified physician anesthesiologists.

C. Curriculum

1. The curriculum must ensure the achievement of program goals and learning domains. Instruction must be an appropriate sequence of classroom, laboratory, and clinical activities. Instruction must be based on clearly written course syllabi that include course description, course objectives, methods of evaluation, topic outline, and competencies required for graduation.

General content areas must include:

a. Those basic medical sciences that are needed as a foundation for the clinical role of the Anesthesiologist Assistant. In particular, the basic science curriculum must include appropriate content in anatomy, biochemistry, physiology, and pharmacology, with particular emphasis on the cardiovascular, respiratory, renal, nervous, and neuromuscular systems.

b. Medical biophysics appropriate to anesthesia practice, including and emphasizing the principles underlying the function of the devices used in anesthesia delivery systems, in life support systems such as ventilators, and in basic and advanced patient monitors.

c. The principles of patient monitoring emphasizing the design, function, and recognition of artifacts and interpretation of data relevant to anesthesia care.

d. The function of lab instruments and interpretation of data obtained from clinical laboratories, cardiac and pulmonary laboratories.

e. The concepts of data analysis as related to the collection, processing, and presentation of basic science and clinical data in medical literature emphasizing methods that support an understanding of clinical decision-making.

f. Patient assessment, including techniques of interviewing to elicit a health history and performing a physical examination at the level appropriate for preoperative, intraoperative, and postoperative anesthetic evaluations.

g. Extensive instruction in the clinical practice of anesthesia and patient monitoring, principally in an operating room setting, but also in preoperative areas, postoperative recovery areas, intensive care units, pain clinics, affiliated clinical laboratories and other supporting services.

h. Clinical quality assurance conferences and literature reviews.

i. Competencies in emergency preparedness consistent with professional standards.

2. For first year students, the program must set and require minimum number of clinical hours, and at least annually evaluate and document that the established program minimum is adequate to continue promotion to the second year of the program.

For second and third year students, the program must set and require minimum number of cases by patient population (including pediatrics, adults, geriatrics, acuity, and subspecialties cases - neuro, obstetrics, cardiac, trauma, out-patient) for each of the required patients and conditions listed in these **Standards**, and at least annually evaluate and document that the established program minimums are adequate to achieve entry-level competency.

The curriculum should include the content in Appendix B. The suggested curriculum content is based on the AA Practice Analysis conducted in 2014.

D. Resource Assessment

The program must, at least annually, assess the appropriateness and effectiveness of the resources described in these **Standards**. The results of resource assessment must be the basis for ongoing planning and appropriate change. An action plan must be developed when deficiencies are identified in the program resources. Implementation of the action plan must be documented and results measured by ongoing resource assessment.

IV. Student and Graduate Evaluation/Assessment

A. Student Evaluation

1. Frequency and purpose

Evaluation of students must be conducted on a recurrent basis and with sufficient frequency to provide both the students and program faculty with valid and timely indications of the students' progress toward and achievement of the competencies and learning domains stated in the curriculum.

2. Documentation

Records of student evaluations must be maintained in sufficient detail to document learning progress and achievements.

B. Outcomes

1. Outcomes Assessment

The program must periodically assess its effectiveness in achieving its stated goals and learning domains. The results of this evaluation must be reflected in the review and timely revision of the program.

Outcomes assessments must include, but are not limited to: national credentialing examination(s) performance, programmatic retention/attrition, graduate satisfaction, employer satisfaction, job (positive) placement, and programmatic summative measures. The program must meet the outcomes assessment thresholds.

"Positive placement" means that the graduate is employed full or part-time in the profession or in a related field; or continuing his/her education; or serving in the military. A related field is one in which the individual is using cognitive, psychomotor, and affective competencies in the educational program.

2. Outcomes Reporting

The program must periodically submit to the ARC-AA the: program goal(s), learning domains, evaluation systems (including type, cut score, and appropriateness), outcomes, its analysis of the outcomes, and an appropriate action plan based on the analysis.

Programs not meeting the established thresholds must begin a dialogue with the ARC-AA to develop an appropriate plan of action to respond to the identified shortcomings.

V. Fair Practices

A. Publications and Disclosure

1. Announcements, catalogs, publications, and advertising must accurately reflect the program offered.

2. At least the following must be made known to all applicants and students: the sponsor's institutional and programmatic accreditation status as well as the name, mailing address, web site address, and phone number of the accrediting agencies; admissions policies and practices, including technical standards (when used); policies on advanced placement, transfer of credits, and credits for experiential learning; number of credits required for completion of the program; tuition/fees and other costs required to complete the program; policies and processes for withdrawal and for refunds of tuition/fees.

3. At least the following must be made known to all students: academic calendar, student grievance procedure, criteria for successful completion of each segment of the curriculum and graduation, and policies and processes by which students may perform clinical work while enrolled in the program.

4. The sponsor must maintain, and make available to the public, current and consistent summary information about student/graduate achievement that includes the results of one or more of the outcomes assessments required in these **Standards**.

The sponsor should develop a suitable means of communicating to the communities of interest the achievement of student/graduates (e.g. through a website or electronic or printed documents).

B. Lawful and Non-discriminatory Practices

All activities associated with the program, including student and faculty recruitment, student admission, and faculty employment practices, must be non-discriminatory and in accord with federal and state statutes, rules and regulations. There must be a faculty grievance procedure made known to all paid faculty.

C. Safeguards

The health and safety of patients, students, faculty, and other participants associated with the educational activities of the students must be adequately safeguarded.

All activities required in the program must be educational and students must not be substituted for staff.

Anesthesiologist Assistant students must be readily identifiable to patients and clinical co-workers as Anesthesiologist Assistant students.

The intent of the students' patient management experience must always be focused on patient safety while maximizing the educational experience. Students must undertake patient care duties commensurate with their level of competency. The students must at no time be considered the anesthesia provider of record. When students are assigned to any patient care duty, a physician anesthesiologist must be immediately available to provide hands-on care that can affect the patient outcome.

As students approach graduation, the supervising physician anesthesiologist may assign to them an increased level of responsibility for the delivery of anesthesia care to patients commensurate with their demonstrated knowledge, skills, and clinical judgment.

D. Student Records

Satisfactory records must be maintained for student admission, advisement, counseling, and evaluation. Grades and credits for courses must be recorded on the student transcript and permanently maintained by the sponsor in a safe and accessible location.

E. Substantive Change

The sponsor must report substantive change(s) as described in Appendix A to CAAHEP/ARC-AA in a timely manner. Additional substantive changes to be reported to ARC-AA within the time limits prescribed include:

1. Change in relationship with the school of medicine; and
2. Change in relationship with the Department of Anesthesiology affiliations.

F. Agreements

There must be a formal affiliation agreement or memorandum of understanding between the sponsor(s) and all other entities that participate in the education of the students describing the relationship, role, and responsibilities between the sponsor and that entity.

Appendix A

Application, Maintenance and Administration of Accreditation

A. Program and Sponsor Responsibilities

1. Applying for Initial Accreditation

a. The chief executive officer or an officially designated representative of the sponsor completes a "Request for Accreditation Services" form and returns it electronically or by mail to:

ARC-AA
N84W33137 Becker Ln
Oconomowoc, WI 53066

The "Request for Accreditation Services" form can be obtained from the CAAHEP website at https://www.cognitoforms.com/CAAHEP2/RequestForAccreditationServices.

Note: There is **no** CAAHEP fee when applying for accreditation services; however, individual committees on accreditation may have an application fee.

b. The program undergoes a comprehensive review, which includes a written self-study report and an on-site review.

The self-study instructions and report form are available from the ARC-AA. The on-site review will be scheduled in cooperation with the program and ARC-AA once the self-study report has been completed, submitted, and accepted by the ARC-AA.

2. Applying for Continuing Accreditation

a. Upon written notice from the ARC-AA, the chief executive officer or an officially designated representative of the sponsor completes a "Request for Accreditation Services" form, and returns it electronically or by mail to:

ARC-AA
N84W33137 Becker Ln
Oconomowoc, WI 53066

The "Request for Accreditation Services" form can be obtained from the CAAHEP website at https://www.cognitoforms.com/CAAHEP2/RequestForAccreditationServices.

b. The program may undergo a comprehensive review in accordance with the policies and procedures of the ARC-AA.

If it is determined that there were significant concerns with the conduct of the on-site review, the sponsor may request a second site visit with a different team.

After the on-site review team submits a report of its findings, the sponsor is provided the opportunity to comment in writing and to correct factual errors prior to the ARC-AA forwarding a recommendation to CAAHEP.

3. Administrative Requirements for Maintaining Accreditation

a. The program must inform the ARC-AA and CAAHEP within a reasonable period of time (as defined by the ARC-AA and CAAHEP policies) of changes in chief executive officer, dean of health professions or equivalent position, and required program personnel (Refer to Standard III.B.).

b. The sponsor must inform CAAHEP and the ARC-AA of its intent to transfer program sponsorship. To begin the process for a Transfer of Sponsorship, the current sponsor must submit a letter (signed by the CEO or

designated individual) to CAAHEP and the ARC-AA that it is relinquishing its sponsorship of the program. Additionally, the new sponsor must submit a "Request for Transfer of Sponsorship Services" form. The ARC-AA has the discretion of requesting a new self-study report with or without an on-site review. Applying for a transfer of sponsorship does not guarantee that the transfer will be granted.

c. The sponsor must promptly inform CAAHEP and the ARC-AA of any adverse decision affecting its accreditation by recognized institutional accrediting agencies and/or state agencies (or their equivalent).

d. Comprehensive reviews are scheduled by the ARC-AA in accordance with its policies and procedures. The time between comprehensive reviews is determined by the ARC-AA and based on the program's on-going compliance with the Standards, however, all programs must undergo a comprehensive review at least once every ten years.

e. The program and the sponsor must pay ARC-AA and CAAHEP fees within a reasonable period of time, as determined by the ARC-AA and CAAHEP respectively.

f. The sponsor must file all reports in a timely manner (self-study report, progress reports, probation reports, annual reports, etc.) in accordance with ARC-AA policy.

g. The sponsor must agree to a reasonable on-site review date that provides sufficient time for CAAHEP to act on a ARC-AA accreditation recommendation prior to the "next comprehensive review" period, which was designated by CAAHEP at the time of its last accreditation action, or a reasonable date otherwise designated by the ARC-AA.

Failure to meet any of the aforementioned administrative requirements may lead to administrative probation and ultimately to the withdrawal of accreditation. CAAHEP will immediately rescind administrative probation once all administrative deficiencies have been rectified.

4. Voluntary Withdrawal of a CAAHEP- Accredited Program

Notification of voluntary withdrawal of accreditation from CAAHEP must be made by the Chief Executive Officer or an officially designated representative of the sponsor by writing to CAAHEP indicating: the desired effective date of the voluntary withdrawal, and the location where all records will be kept for students who have completed the program.

5. **Requesting Inactive Status of a CAAHEP- Accredited Program**

Inactive status for any accredited program may be requested from CAAHEP at any time by the Chief Executive Officer or an officially designated representative of the sponsor writing to CAAHEP indicating the desired date to become inactive. No students can be enrolled or matriculated in the program at any time during the time period in which the program is on inactive status. The maximum period for inactive status is two years. The sponsor must continue to pay all required fees to the ARC-AA and CAAHEP to maintain its accreditation status.

To reactivate the program, the Chief Executive Officer or an officially designated representative of the sponsor must provide notice of its intent to do so in writing to both CAAHEP and the ARC-AA. The sponsor will be notified by the ARC-AA of additional requirements, if any, that must be met to restore active status.

If the sponsor has not notified CAAHEP of its intent to re-activate a program by the end of the two-year period, CAAHEP will consider this a "Voluntary Withdrawal of Accreditation."

B. CAAHEP and Committee on Accreditation Responsibilities – Accreditation Recommendation Process

1. After a program has had the opportunity to comment in writing and to correct factual errors on the on-site review report, the ARC-AA forwards a status of public recognition recommendation to the CAAHEP Board of Directors. The recommendation may be for any of the following statuses: initial accreditation, continuing accreditation, transfer of sponsorship, probationary accreditation, withhold of accreditation, or withdrawal of accreditation.

The decision of the CAAHEP Board of Directors is provided in writing to the sponsor immediately following the CAAHEP meeting at which the program was reviewed and voted upon.

2. Before the ARC-AA forwards a recommendation to CAAHEP that a program be placed on probationary accreditation, the sponsor must have the opportunity to request reconsideration of that recommendation or to request voluntary withdrawal of accreditation. The ARC-AA reconsideration of a recommendation for probationary accreditation must be based on conditions existing both when the committee arrived at its recommendation as well as on subsequent documented evidence of corrected deficiencies provided by the sponsor.

   The CAAHEP Board of Directors' decision to confer probationary accreditation is not subject to appeal.

3. Before the ARC-AA forwards a recommendation to CAAHEP that a program's accreditation be withdrawn or that accreditation be withheld, the sponsor must have the opportunity to request reconsideration of the recommendation, or to request voluntary withdrawal of accreditation or withdrawal of the accreditation application, whichever is applicable. The ARC-AA reconsideration of a recommendation of withdraw or withhold accreditation must be based on conditions existing both when the ARC-AA arrived at its recommendation as well as on subsequent documented evidence of corrected deficiencies provided by the sponsor.

   The CAAHEP Board of Directors' decision to withdraw or withhold accreditation may be appealed. A copy of the CAAHEP "Appeal of Adverse Accreditation Actions" is enclosed with the CAAHEP letter notifying the sponsor of either of these actions.

   At the completion of due process, when accreditation is withheld or withdrawn, the sponsor's Chief Executive Officer is provided with a statement of each deficiency. Programs are eligible to re-apply for accreditation once the sponsor believes that the program is in compliance with the accreditation Standards.

Note: Any student who completes a program that was accredited by CAAHEP at any time during his/her matriculation is deemed by CAAHEP to be a graduate of a CAAHEP-accredited program.

APPENDIX B
Guidelines for Curriculum Didactic and Clinical Content

A. PHYSIOLOGY *(Applied and General)*

1. *Neuromuscular physiology*
    a. *Physiology of the neuron*
    b. *Anatomy of the neuromuscular junction*
    c. *Membrane and action potentials*
    d. *Excitation and contraction of the smooth muscle*
    e. *Neuromuscular blockade and transmission*
    f. *Malignant hyperthermia*

2. *Nervous system*
    a. *Organization of the nervous system*
    b. *Peripheral and central nervous system*
    c. *Physiology of neurons and synapses*
    d. *Characteristics of synaptic transmission*
    e. *Sensory receptors*
    f. *Nerve fibers that transmit different types of signals and their physiologic classification*
    g. *Spatial and temporal summation*

3. *Autonomic nervous system*
    a. *Sympathetic nervous system*
        i. *Anatomy of the sympathetic nervous system*
        ii. *Sympathetic neurotransmission and catecholamine physiology*
        iii. *Adrenergic receptors*
    b. *Parasympathetic nervous system*
        i. *Anatomy of the parasympathetic nervous system*
        ii. *Parasympathetic neurotransmission*
        iii. *Cholinergic receptors*

4. *Central nervous system*
    a. *Neuroanatomy of spine and spinal cord*
        i. *Cranial nerves*
        ii. *Motor functions of the spinal cord and cord reflexes*
        iii. *Cerebrospinal fluid*
            a. *Cerebral blood flow and metabolism*
        iv. *Intracranial pressure*
            a. *Head trauma, psychiatric illness, and cerebrovascular disorders*

5. *Cardiac physiology*
    a. *Electrophysiology and conduction pathways*
        i. *Mechanisms of heart rate control and ventricular action potentials*
        ii. *Specialized excitatory and conductive systems*
        iii. *Control of excitation and conduction*
        iv. *Electrocardiographic interpretation*
    b. *Determinants of cardiac output and systemic arterial blood pressure*
        i. *Preload, afterload, and contractility*
        ii. *Cardiac output, venous return and their regulation*
        iii. *Frank – Starling Mechanism*
    c. *Left ventricular pressure-volume relationships*
    d. *Ventricular function curves*
    e. *Treatment of intra-operative ischemia and coronary artery disease*
    f. *Subvalvular aortic stenosis*
    g. *Cardiac arrhythmias*

6. *Circulatory physiology*
    a. *Microcirculation, lymphatics, capillary fluid exchange, interstitial fluid*

b. *Local and humoral control of blood flow by the tissues*

7. *Blood and Hemostasis*
    a. *Platelet aggregation and coagulation cascade*
    b. *Fibrinolysis, plasmin, and coagulation tests*
    c. *Disorders of coagulation*
    d. *Transfusion therapy*

8. *Respiratory physiology*
    a. *Anatomy of the larynx*
    b. *Gas diffusion and partial pressures*
    c. *Oxygen and carbon dioxide carriage by blood*
        i. *Oxygen dissociation curves and abnormalities*
    d. *Control of ventilation*
        i. *Respiratory centers and sensory pathways*
    e. *Pulmonary mechanics*
        i. *Ventilation: perfusion relationships*
        ii. *Hypoxic pulmonary vasoconstriction and one-lung ventilation*
    f. *Pulmonary function tests*
        i. *Flow volume loops*
        ii. *Airway closure and closing capacity*
        iii. *Blood gas physiology*
    g. *Chronic and acute respiratory pathophysiology*
        i. *Restrictive and obstructive diseases*
        ii. *OSA*

9. *Body fluid, electrolytes and the kidney*
    a. *Fluid compartments*
    b. *Fluid management*
    c. *Anatomy of the nephron and vascular supply*
    d. *Physiology of urine formation*
    e. *Regulation of fluid volume and osmolality*
    f. *Intra- and extra-cellular fluids*
    g. *Renal tubular control of electrolyte balance*
    h. *Renal failure and fluid-electrolyte disturbances*
    i. *Acid-base balance and disturbances*

10. *Endocrine physiology*
    a. *Thyroid and adrenal physiology*
    b. *Insulin, glucagon and somatostatin*
    c. *Parathyroid hormone and calcitonin*
    d. *Endocrine disorders*

11. *Hepatic physiology*
    a. *Hepatic anatomy and vascular physiology*
    b. *Hepatic disease*

12. *Physiology of pregnancy*
    a. *Pathophysiology of the uterus and the placenta*
    b. *Parturition*
    c. *Pharmacological alterations*

13. *Fetal and neonatal physiology*
    a. *Cardiopulmonary system*
    b. *Fluid balance*
    c. *Renal and hepatic function*

B. PHARMACOLOGY

1. *Pharmacokinetics and pharmacodynamics*
    a. *Absorption, distribution, metabolism, and excretion*
    b. *Drug-receptor interactions*
    c. *Weak acids and weak bases*

2. *Inhalational anesthetics*

3. *Intravenous anesthetics*

4. *Opioids*
    a. *Pharmacology of opioid agonists and antagonists*
    b. *Central and peripheral administration of opioids*
    c. *Pain pathways*
        i. *Peripheral afferents and pain conduction*
        ii. *Classification of pain*
        iii. *Mechanism of analgesia*
        iv. *Modulation of pain*
        v. *Spinal and supraspinal analgesia*

5. *Neuromuscular blocking agents*
    a. *Depolarizing and non-depolarizing agents*
    b. *Interactions with neuromuscular blockers*
    c. *Reversal of neuromuscular blockade*

6. *Drugs acting on the autonomic nervous system*
    a. *Sympathetic nervous system*
        i. *Clinical use of catecholamines and synthetic non-catecholamines*
        ii. *Effects of adrenergic agonists and antagonists*
        iii. *Centrally and peripherally acting sympathetic nervous system agents*
    b. *Parasympathetic nervous system*
        i. *Cholinergic agonists and antagonists*

7. *Local anesthetics*
    a. *Structure activity relationships*
    b. *Metabolism*
    c. *Management of toxicity syndrome*

8. *Calcium channel blockers*

9. *Cardiac antidysrhythmic drugs*

10. *Cardiac glycosides and related drugs*

11. *Antihypertensives and vasoactive agents*

12. *Antihistaminergic drugs and autacoids*

13. *Antimicrobial pharmacology*

14. *Steroids*

15. *NSAIDs*

16. *Hormones*

17. *Hemostatic agents*
    a. *Anticoagulants, antifibrinolytics, and thrombin inhibitors*

18. *Diuretics*
    a. *Mechanisms of action and side effects*

19. *Gastroinestinal pharmacology*
    a. *Antacids and prokinetics*

20. *Antiemetics*

21. *Insulin and oral hypoglycemic agents*

22. *Antiseizure drugs*

23. *Math for calculating concentrations*

24. *Drug-drug interactions and toxicities*

25. *Drug allergies*

C. ANESTHESIA EQUIPMENT

1. *Anesthesia delivery systems*

2. *Gases, gas containers, and piping systems*

3. *Anatomy of the anesthesia machine*

4. *Vaporizing liquid anesthetic agents*

5. *Breathing circuits*
    a. *Open, semi-open, closed, semi-closed breathing systems*
    b. *Time constants*

6. *Anesthesia ventilators*

7. *Scavenging waste gases and controlling pollution*

8. *Oxygen delivery and ventilation during MAC, transport, and MRI*

9. *Ultrasound*

D. INSTRUMENTATION & MONITORING

1. *Assess, interpret, and respond to changes in patient monitoring*
    a. *ECG*
        i. *ECG in relation to mechanical and electrical events of the heart*
        ii. *Intervals and QRS nomenclature*
        iii. *Atrial and ventricular arrhythmias and conduction abnormalities*
    b. *Non-invasive monitoring*
        i. *Blood pressure*
        ii. *Transesophageal echocardiography (e.g., PFT, ECHO)*
        iii. *Doppler and ultrasonic imaging*
        iv. *Cardiac output*
    c. *Oxygen monitoring, oximetry and plethysmography*
    d. *Capnography & respiratory gas analysis*
    e. *Monitoring the neuromuscular junction*
    f. *Invasive monitoring principles and techniques*
        i. *Peripheral arterial pressure waveforms and monitoring*
        ii. *Pulmonary artery pressure and monitoring*
        iii. *Central venous pressure and monitoring*

iv. *Intracranial pressure monitoring*
v. *Cardiac output measurement*

g. *Temperature control and monitoring*
i. *Body and fluid warming devices*

h. *Fetal Monitoring*
i. *Arterial blood gas analysis*
j. *EEG, processed EEGs, and evoked potentials*
k. *Point of care devices*

2. *Cardiovascular support devices*
a. *Pacemakers and AICDs*
b. *Ventricular assist devices and cardiopulmonary bypass*

3. *Blood salvage and rapid infusion devices*

E. PHYSICS

1. *Units of measurement, dimensional analysis review of special functions, physical concepts and mathematical tools*

2. *Pressure, tension, and vacuum*

3. *Flow, resistance, power and work*

4. *Partial pressures and solubility*

5. *Diffusion and osmosis*

6. *Gas laws, cylinders, and transport processes*

7. *Vaporization and humidification*

8. *Physiologic signals and electrical analogs*

9. *Electrical circuits and physiologic analogs*
a. *Pressure/voltage, flow/current, resistance*
b. *Direct and alternating current sources*
c. *Series, parallel and series-parallel circuits*
d. *Capacitors and inductors – time constants*
e. *Impedance*
f. *Transformers*

10. *Principles of lasers, fires, explosions and radiation*
a. *Electrocautery and laser technology*

F. AIRWAY MANAGEMENT

1. *Airway anatomy and physiology*

2. *Airway management equipment (e.g., fiberoptic and glide scopes, LMA, DLT)*

3. *Evaluation of the airway*

4. *Techniques for intubation & extubation*

5. *The difficult airway*

6. *Pediatric and advanced airway management*

7. *Ventilation assist devices (e.g., BiPAP, CPAP)*

G. METHODS OF ANESTHESIA *(e.g., general, regional, MAC, TIVA)*

1. *Regional anesthesia*
    a. *Neuraxial blockade*
    b. *Peripheral nerve blockade*
    c. *Intravenous regional anesthesia*
    d. *Complications and techniques*
    e. *Drug regimens for epidural and spinal anesthetics*

2. *Monitored anesthesia care*
    a. *Unique challenges of diverse sedation management techniques and locations*

3. *Positioning*
    a. *Considerations related to safe positioning in regard to surgical and anesthesia implications (e.g., lithotomy, sitting craniotomy, beach chair, brachial plexus, extremity neuropathy, prone facial/ocular, ventilation perfusion mis-match)*

4. *Obstetric anesthesia*
    a. *Physiologic changes of the parturient*
    b. *Fetal and placental physiology*
    c. *General and regional anesthesia during pregnancy*
    d. *Stages of labor and pain pathways*
    e. *Management of the complicated pregnancy*

5. *Pediatric anesthesia*
    a. *Pediatric physiology and anatomy*
    b. *Pediatric congenital anomalies (cardiovascular and developmental)*
    c. *Pharmacodynamics and kinetics of the pediatric patient*
    d. *Airway management of the pediatric patient*

6. *Geriatric anesthesia*
    a. *Physiologic and pharmacologic changes of aging*

7. *Neurosurgical anesthesia*

8. *Cardiac anesthesia*

9. *Trauma anesthesia*

H. ANESTHESIA MANAGEMENT

1. *Preoperative Assessment*
    a. *preoperative evaluation and assessment techniques*
        i. *Lab value assessment*
        ii. *Physical exam*
        iii. *Patient interview*
        iv. *NPO guidelines*
        v. *Anesthesia plan formulation*
        vi. *Special tests (e.g., PFT, ECHO)*
    b. *Imaging*

2. *Intraoperative Management*
    a. *Communication with perioperative team*
        i. *Timeout*
        ii. *Care transitions or handoffs*
    b. *Intraoperative complications/critical events*
        i. *Hazards (e.g., airway fires, burns, electrical)*
    c. *Changes in patient physiology*
    d. *Documentation/charting*

e. *Perioperative pain management*

3. *Postoperative management*
    a. *Patient care transfer to PACU, ICU, etc.*
    b. *Acute pain management strategies*
    c. *Post-operative complications*

I. INFECTION CONTROL

1. *Universal precautions*
    a. *PPEs*
    b. *Hand hygiene*
    c. *Scrubbing and gowning*

2. *Surgical site infection prevention protocols (e.g., prophylactic antibiotic treatment, sterile technique)*

J. CLINICAL PRACTICE MANAGEMENT AND DEVELOPMENT

1. *ASA Practice Guidelines*

2. *ASA Standards of Care*

3. *Professional organizations in the field (e.g., ARC-AA, AAAA, NCCAA, ASA)*

4. *QA/QI process*

5. *Evidence-based case study analysis*

6. *Provision of high quality cost-effective care*

7. *Professional practice standards*

8. *Role of the Anesthesia Care Team*

9. *Cardiopulmonary Resuscitation*

10. *Situational awareness*

11. *Patient safety guidelines*

12. *Non-operating room anesthesia*

K. PROFESSIONALISM

1. *Truthfulness and transparency*

2. *Patient sensitivity, empathy, accountability, respect*

3. *Ethics in anesthesia*

4. *Advocacy*

L. PROVIDER WELLNESS

1. *Occupational health*
    a. *Infection from patients*
    b. *Exposure to anesthetic agents*

2. *Practitioner personal wellness*

a. *Stress management*
b. *Managing challenging outcomes*
c. *Dependency*

M. CLINICAL CONTENT OUTLINE

Total Anesthesia Cases	*600*
Total Hours Clinical Anesthesia	*2000*
Patient ASA Class III & IV	*150*
Emergent (ASA Class E)	*30*
Trauma Cases	*5*
Ambulatory	*100*
Patient Population	
Geriatric (65 + years)	*100*
*Pediatric (0 - 18)**	*50*
Anatomical Location Surgery	
Intra-abdominal	*75*
Intracranial	*5*
Head & Neck	*20*
Intrathoracic	*20*
Heart	*10*
Lung	*10*
Obstetrical Cases (including Deliveries, C-Sect & Procedures)	*35*
Vascular	*15*
Methods of Anesthesia	
General Anesthesia	*400*
Induction, Maintenance & Emergence	
Mask Induction	*35*
Mask Management	*30*
Supraglottic Airway Device	*35*
Tracheal Intubation	*255*
Oral	*250*
Nasal	*5*
Total Intravenous Anesthesia	*10*
Emergence from Anesthesia	*250*
Regional Techniques	
Management/Administration	*40*
Monitored Anesthesia Care	*30*

Other Anesthetic Management	
Alternative Airway Management	
Fiberoptic Intubation, Light Wand, etc. (all airway techniques other than direct laryngoscopy and supraglottic airway device)	*10*
Arterial Technique	
Arterial Puncture/Catheter Insertion	*25*
Intra-arterial BP monitoring	*30*
Central Venous Pressure Catheter	
Placement	*5*
Monitoring	*15*
Other	
Intravenous Catheter Placement	*125*
Gastric Tube Placement	*5*
Placement of One Lung Isolation Device	*5*