

AMERICAN COLLEGE OF VETERINARY SURGEONS

PHASE I SURGICAL KNOWLEDGE EXAMINATION  
INFORMATION PAMPHLET

**EXAMINATION DATE: APRIL 12, 2021**



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*Note: This Pamphlet reflects the policies and procedures as of September 2020. All policies and procedures are subject to change. If you have any questions or require further information, please visit [www.acvs.org](http://www.acvs.org) or contact the ACVS staff at 301-916-0200 x104.*

## REQUIREMENTS FOR BOARD CERTIFICATION

In order to achieve board certification, individuals must obtain each of the credentials outlined below.

- I. Successful completion and approval of all Resident Training Requirements.
- II. Successful submission and acceptance of a scientific manuscript in an approved journal.
- III. Submission and acceptance of a Credentials Application.
- IV. Successful passing of all components of the Examination.

The ACVS Examination consists of two parts: Phase I Surgical Knowledge and Phase II Surgical Competency. It is highly recommended that Phase I be taken during year 2 of the residency. Phase II is taken after the residency.

## POLICIES FOR ACTIVE/POST-PROGRAM RESIDENTS

These policies apply to individuals who started their training after August 1, 2012.

### ELIGIBILITY FOR THE PHASE I EXAMINATION

Effective for the 2021 examination, to be eligible to take the Phase I Examination a resident must submit a signed "[ACVS Phase I Surgical Knowledge Examination Statement of Resident Eligibility](#)" form with their registration. The form is required of all prospective examinees, regardless of whether they have been previously found eligible by ACVS. Refer to the [Residency Training Standards and Requirements](#) for complete policies.

**REVISED:** Eligibility for Phase I is determined by program and resident via form.

### RETAKING THE EXAMINATION

Residents who fail the Phase I examination must register with ACVS by the established registration deadline (approximately December 3) in the year immediately preceding the desired examination. Residents should be sure that the ACVS office has their current contact information, including email.

Residents who do not pass the Phase I examination may take it again the next year subject to time limits and continued proof of eligibility, as detailed in the [Residency Training Standards and Requirements](#). Current and inactive residents must upload a new statement of eligibility for each examination. Residents who have completed their training may continue to use the form signed by their Program Director and Resident Advisor at the end of their training.

### LIMITATIONS

The Phase I examination is considered a resident training requirement and must be passed within 6 years of the start of the residency.

## POLICIES FOR INDIVIDUALS TRANSITIONING FROM THE TRADITIONAL CERTIFICATION EXAMINATION

Candidates transitioning from the traditional examination are required to take the Phase I examination if they did not pass the written examination as of February 2018, or the Phase I examination in subsequent years.

Each candidate required to take both the Phase I and Phase II examinations should register for both examinations in the same calendar year. Candidates must pass both Phase I and Phase II within three calendar years, although those years do not need to be consecutive (for example, 2019, 2021, 2022). Candidates who choose not to register for both Phase I and Phase II in the same calendar year may forfeit an attempt at the examination for which they did not register. If you take either or both examinations within a single calendar year, that counts as one attempt. Candidates are given three attempts to pass both examinations. Recredentialing will be required if the candidate has not successfully completed all required examinations (Phase I and/or Phase II) as applicable within 3 attempts per examination.

## RETAKING THE EXAMINATION

Candidates who fail the Phase I examination must register with ACVS by the established registration deadline (approximately December 3) in the year immediately preceding the desired examination. Candidates should be sure that the ACVS office has their current contact information, including email.

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## CANDIDATES WHO DID NOT PASS THE THIRD ATTEMPT

Failure to successfully complete the Phase I examination within three (3) attempts will require submission of a recredentialing application to the Resident Credentialing Committee. Upon approval of the application by the ACVS Board of Regents, complete re-examination is required. The Phase I examination is required if the written or Phase I examination has never been passed. Both sections of the Phase II examination are required following recredentialing. Candidates should contact the ACVS office regarding current Credentials Application requirements.

## LIMITATIONS

**Candidates who began in the traditional certification examination process and must pass the Phase I examination are given two options, whichever allows the greater number of examination attempts:** 1) a maximum of six examination attempts within nine years from acceptance of their credentials application, or 2) candidates who have taken the Phase I examination six times or more by 2020 may take the examination two more times before 2023 (i.e., the last examination is in 2022), subject to successful recredentialing. Candidates who began in the traditional certification examination process and must pass both the Phase I and Phase II examinations are subject to these time limits for both examinations.

Any candidate who has not passed both examinations after six attempts, or, if applicable, before 2023, will be required to restart the process to achieve ACVS board certification and meet all requirements (new residency, Phase I examination, acceptance of credentials, Phase II examination, etc.).

## TAKING THE PHASE II SURGICAL COMPETENCY EXAMINATION

The Phase II examination is offered in mid-to-late February each year.

In order for active/post-program residents to be eligible to take the Phase II examination, all resident training requirements must be completed and approved by the RCC; the Phase I examination must be successfully passed; and a credentials application must be approved by the Resident Credentialing Committee and ACVS Board of Regents.

Transitioning candidates may take the Phase II examination at any time within the current cycle of three attempts.

## CERTIFICATION FOR TRANSITIONING CANDIDATES

Transitioning candidates who pass all required examinations will be issued a time-limited certificate indicating that they are a Diplomate of the American College of Veterinary Surgeons in Large Animal Surgery or Small Animal Surgery. Time-limited certificates will be good for five years. Diplomates with time-limited certificates will need to document continuous maintenance of certification through a variety of activities, such as attending or presenting at continuing education meetings, publishing manuscripts, serving on select ACVS committees, and participating in resident training. The process for [maintenance of certification](#) is posted on the ACVS website.

## EXAMINATION DESCRIPTION

The Phase I Surgical Knowledge Examination will be held April 12, 2021, at Pearson VUE test centers in the continental U.S. and Canada.

The Phase I examination is developed to test the resident's knowledge base of the basic sciences relative to each of an animal's systems (e.g., gastrointestinal, musculoskeletal, cardiovascular) and of general pharmacology, surgical knowledge, and anesthetic principles.

The Phase I examination consists of 125 multiple choice questions with one correct answer. These questions are administered in a seven-hour examination period at a Pearson VUE test center in the continental United States and Canada. **The examination will be split into two parts. Each part will have an equal portion of time.**

- There will be an optional break of up to one hour between the two parts of the examination. The test time will stop during this break. Candidates must remain at the test center during the break. Candidates will not be able to return to the first part after the break.
- Candidates may take unscheduled breaks during the two examination parts. Please note, however, that test time will not stop during unscheduled breaks.
- During the scheduled break, candidates may access food/snacks in their lockers, as well as medication and [comfort aids as defined by Pearson](#) (e.g., cough drops, inhaler, diabetic tools—see link for full list). Candidates are not permitted to access notes, phones, or study materials during the breaks. Food and drink are prohibited within the testing rooms.

The Phase I examination consists of questions that cover gastrointestinal, cardiovascular, respiratory, musculoskeletal, urogenital, neurological/special senses, endocrine (small animal only), and integumentary systems. In each organ system, questions will be asked on basic sciences (anatomy, physiology, pathobiology). Non-system-specific questions will be asked on pharmacology, surgical principles, and principles of anesthesia/analgesia and pain management. The ACVS Examination Committee members develop new Phase I questions each year. These questions are reviewed for relevance to the examination blueprint (included in this pamphlet), clarity, and importance for competent practice. Each question is validated by securing a reference source that corroborates the information in the question. The sources used comprise current veterinary textbooks and current medical texts including, but not limited to, the recommended reading list. Approximately ten (10) pre-selected pilot questions are included in each year's Phase I examination. These questions are included to collect statistical information for determining whether they should be used as scored questions on future examinations. They do not contribute to the total examination score. The Phase I examination is computer scored.

## EXAMINATION RULES

The integrity of the Phase I examination of the American College of Veterinary Surgeons will be maintained to ensure fairness to all candidates during the test. Any questions should be directed to Ann Loew, ACVS Chief Executive Officer, at (301) 916-0200 x108 or the Chair of the Examination Committee.

**The deadline for registering for the examination is December 3, 2020.** The online registration process must be completed by 11:59pm EST and fees paid online or received by ACVS no later than this date. ACVS will not allow late submission of registration or payment due to delivery service problems, insufficient postage, international customs, computer/internet issues, etc.

## REGISTERING FOR THE EXAMINATION

**Registering for the examination consists of submitting the online application and paying the examination fee.**

**Deadline:** Submit your application and online examination fee payment no later than **11:59pm EST, December 3, 2020**. Mailed examination fee payments must arrive *by close of business (5pm Eastern time) on December 3, 2020* at the ACVS office.

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## SUBMIT THE ONLINE REGISTRATION APPLICATION

**Candidates must register online for the Phase I examination at [www.acvs.org/apply](http://www.acvs.org/apply). Online registration opens October 5 for eligible candidates.** During the application process candidates will need to:

- 1) Provide their full name as it appears on a government-issue photo ID. Candidates are required to show one (1) VALID government-issued photo ID with signature at the test center. The name on the ID must match the name provided during the registration process exactly or the candidate will be turned away from the test center.
- 2) Provide their current address to assist with Pearson VUE appointment scheduling, as well as a mobile phone number.
- 3) Upload the [ACVS Phase I Surgical Knowledge Examination Statement of Resident Eligibility](#). The form must be signed by the Program Director, Resident Advisor, and resident. *Note, this form is not required for candidates transitioning from the previous certification examination.*
- 4) Indicate whether they wish to [request an accommodation](#) for a disability or a health-related concern. Candidates requesting accommodations must indicate desired accommodations and upload **all** supporting documentation from an appropriate health care professional (e.g., physician, psychologist, psychiatrist) certifying the disability.
- 5) Agree to the terms and conditions of the **ACVS Phase I Surgical Knowledge Examination Contract**. Candidates who fail to agree with these terms will not be allowed to take the Phase I examination.
- 6) Indicate how the examination fee is being paid.

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## PAY THE EXAMINATION FEE

Phase I examination fee = \$525

The examination fee is refundable only due to extenuating circumstances (see [Cancellation and Refund](#)).

- [Pay the fee online](#) with a Visa or MasterCard
- Complete the [Phase I Payment Authorization Form](#)
  - Fax to: 301-916-2287
  - Mail to:

ACVS  
19785 Crystal Rock Drive, Suite 305  
Germantown, MD 20874  
USA

## CONFIRMATION

Candidates will receive an email upon successful submission of their online registration. Candidates who pay the examination fee online will receive an email upon completing the transaction. These emails note only receipt of the registration or payment and do not indicate that the registration is complete.

**Candidates whose examination materials are in order will receive an Examination Authorization email from ACVS on or shortly before December 18, 2020.** This email will include the Candidate ID number and Authorization ID number. Both numbers are required to schedule and take the examination at a Pearson VUE test center.

If a candidate submits a registration and does not receive the Examination Authorization email from the ACVS office on December 18, the candidate should contact the ACVS office immediately. Note: Candidates are responsible for notifying the ACVS office of any address and email changes prior to and following the examination.

## REQUESTING AN ACCOMMODATION

All candidates who intend to take the 2020 ACVS Phase I Surgical Knowledge Examination must indicate whether they wish to request an accommodation during the online registration process.

ACVS complies with the Americans with Disabilities Act (ADA) of 1990 and the ADA Amendments Act of 2008. ACVS will provide certain accommodations for candidates when appropriate. Additionally, ACVS will provide accommodations for certain health-related needs. If you have a disability and may require some accommodation in taking the examination, you must **complete all questions and upload required documentation in your application**. Accommodations must be requested in advance. Candidates who request accommodations will be notified separately of the determination. The Phase I examination is conducted at test centers. The test centers are not authorized to make accommodations that have not been approved by ACVS.

Accommodations are not required for items on the [Pearson VUE comfort aids list](#).

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## ACCOMMODATIONS REQUESTS FOR DISABILITIES

Candidates who request an accommodation will need to indicate the type of disability, how long they have had the disability, and the type of accommodation requested. Additionally, candidates will need to indicate past accommodations made in college or veterinary school.

The following documentation must be uploaded into the online system. This documentation will be reviewed by select members of the Examination Committee, the examination consultant, and the staff liaison to the committee for the purpose of ensuring the correct documentation has been submitted and evaluating the request for the accommodation.

- 1) Written documentation from an appropriate health care professional (e.g., physician, psychologist, psychiatrist) certifying your disability and the accommodation being requested.
  - a) For physical or sensory disabilities of a permanent or unchanging nature (e.g., loss of limb, loss of hearing), documentation must include a brief statement from a qualified professional confirming the condition and describing the impact of the disability on the individual.
  - b) For disabilities of a non-permanent nature, written documentation must be current\* and include:
    - i) a diagnosis of your health condition;
    - ii) when the diagnosis was originally made and reassessed, if applicable;
    - iii) a description of the assessment and a copy of the assessment; and,

iv) a specific recommendation and justification for the accommodation being requested.

\*Current written documentation is defined as having been completed within the following timeframes:

- last five (5) years for learning disabilities (LD), autism spectrum disorder (ASD), or intellectual disability (ID)
- last three (3) years for attention deficit hyperactivity disorder (ADHD) and all other disabilities, excluding physical or sensory disabilities of a permanent or unchanging nature
- last six (6) months for psychiatric disabilities

2) Attach written documentation from the institution with the dates and special services and testing accommodations you received during the course of your education because of your disability.

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## ACCOMMODATIONS REQUESTS FOR HEALTH-RELATED NEEDS

Candidates who have special needs that are not generally covered by the ADA (e.g., injury, broken limb, pregnancy, lactation) may request courtesy accommodations and submit applicable materials with the application. Courtesy accommodations also include any requests to bring medical items or comfort aids not on the [Pearson VUE comfort aids list](#). Candidates requesting accommodations due to lactation should review the Pearson VUE policy for [Testing Exceptions for Nursing Mothers](#).

Candidates should indicate specific accommodations being requested and upload written documentation from an appropriate health care professional (e.g., physician) attesting to the health condition and supporting the accommodation being requested. This documentation will be reviewed by select members of the Examination Committee, the examination consultant, and the staff liaison to the committee to ensure the correct documentation has been submitted and evaluate the request for the accommodation.

## SCHEDULING THE EXAMINATION AT A TEST CENTER

The Phase I examination is held at Pearson VUE test centers in the U.S. and Canada. Candidates may schedule their test appointment online at [www.pearsonvue.com/acvs](http://www.pearsonvue.com/acvs) or by telephone. To schedule online, you must first create a Pearson VUE web account. *Please note that account activation may require up to 24 hours.* Pearson VUE will notify you by email when your account is activated.

To schedule your examination and to create an online account, **you will need the Candidate ID and Authorization ID from your Examination Authorization email** (emailed by ACVS no later than December 18, 2020). Test appointments may be made up to one business day in advance but be aware that many test centers fill prior to the examination period. **You are encouraged to schedule your appointment as soon as you receive the account activation email from Pearson VUE.**

Please note that ACVS candidates are competing for space at test centers with candidates from other examinations. ACVS has made every attempt to authorize candidates as early as possible before the scheduled examination date. **Candidates should make appointments with Pearson VUE promptly after receiving their Examination Authorization email to ensure an appointment with minimal travel required.**

## CANCELLATION AND REFUND

In the event that a candidate needs to cancel their examination registration, the candidate must contact ACVS and Pearson VUE, if they have scheduled an appointment.

Examination fees will be refunded only in cases of extenuating circumstances (e.g., death in the family, medical emergency) and must be supported by written documentation. Allow 30 days for processing refund requests. All requests for refunds must be submitted in writing using one of the following methods:

ACVS  
19785 Crystal Rock Drive, Suite 305  
Germantown, MD 20874  
USA  
[acvs@acvs.org](mailto:acvs@acvs.org)  
fax: 301-916-2287

#### AT THE TEST CENTER

Candidates should refer to the most up-to-date details in their confirmation email from Pearson VUE, as well the Pearson website at <https://home.pearsonvue.com/coronavirus-update> for the latest policies and requirements.

1. Candidates should arrive at the test center 30 minutes before the scheduled appointment time. This will give you adequate time to complete the necessary sign-in procedures. Please be prepared to show one piece of current, government-issued identification, in the name in which you registered, bearing your photograph and signature. Acceptable forms of government-issued identification include photo-bearing driver licenses and passports.
2. If you arrive more than 15 minutes late for your appointment, you may be refused admission.
3. No personal items may be taken into the testing room. This includes all bags, books, notes, phones, pagers, watches, and wallets.
4. Giving or receiving assistance pertaining to information on the examination prior to, during, or after the test period is unethical and not permitted. (See [Examination Security](#).)
5. The use of information aids during the examination is not permitted.
6. Candidates will be provided erasable white boards to use during the examination

#### TEST CENTER AVAILABILITY/CONTINGENCY PLANNING

The Phase I examination is offered only one time each year. In the event of widespread test center closures, ACVS will notify candidates as soon as possible of any alternative/contingency plans that have been enacted. ACVS cannot guarantee that alternatives will be offered.

## 2021 PHASE I EXAMINATION READING LIST

The following references and books are suggested reading in preparation for the 2021 Phase I examination. Other textbooks and current references may be pertinent. Page numbers refer to print textbooks. Digital versions may have different page numbers.

### SELECTED REFERENCES FOR SMALL ANIMAL SURGERY

- 1) Johnston S, Tobias K. *Veterinary Surgery: Small Animal*, Elsevier, (2<sup>nd</sup> Ed), 2018\*.
- 2) Guyton AC, Hall JE. *Textbook of Medical Physiology*, W.B. Saunders Co., (12<sup>th</sup> Ed), 2011 OR (13<sup>th</sup> Ed), 2015.  
12<sup>th</sup> Ed: 2011. *Chapters 4-13, 16, 20, 22, 25, 29, 30, 36-42, 49, 60, 62-64, 70*  
13<sup>th</sup> Ed: 2015. *Chapters 4-13, 16, 20, 22, 25, 30, 31, 37-43, 50, 61, 63-65, 71*
- 3) Lumb and Jones. *Veterinary Anesthesia and Analgesia*, Blackwell Publishing, (5<sup>th</sup> Ed), 2015.  
*Chapters 1-36, 44, 45, 53-57.*
- 4) Boothe DM. *Small Animal Clinical Pharmacology and Therapeutics*, (2<sup>nd</sup> Ed), Elsevier, 2011.  
*Chapter 6 (Principles of Antimicrobial Therapy), Chapter 7 (Antimicrobial drugs), Chapter 19 (GI Physiology), and Chapter 29 (Anti-inflammatory drugs).*
- 5) Johnson AL, Houlton JEF, Vannini R. *AO Principles of Fracture Management in the Dog and Cat*, AO Publishing, 2005. *Chapters 1, 2, 3, 20, 27.*
- 6) Knowledge of basic and applied anatomy is assumed and should be reviewed in an appropriate text. For example: Hermanson JW, Evans HE, de LaHunta A. *Miller's Anatomy of the Dog*, Elsevier, (5<sup>th</sup> Ed), 2019.

REVISED: Guyton 13<sup>th</sup> edition added

\*Phase I portions of Johnston and Tobias. Please note that if no page numbers are given, the entire chapter is included

<b><i>Veterinary Surgery: Small Animal, 2nd Edition, Johnston and Tobias, 2018</i></b>		
<b>Chapter</b>	<b>Title</b>	<b>Pages</b> (full chapter unless specific pages are noted)
<b><i>Surgical Biology</i></b>		
<b>Chapter 1</b>	Inflammatory Response	
<b>Chapter 2</b>	Molecular and Cellular Biology: Genomics	
<b>Chapter 3</b>	Stem Cells and Regenerative Therapy	
<b>Chapter 4</b>	Platelet Rich Plasma and Autologous Conditioned Sera	
<b>Chapter 5</b>	Fluid Therapy	
<b>Chapter 6</b>	Shock	
<b>Chapter 7</b>	Bleeding and Hemostasis	
<b>Chapter 8</b>	Metabolism and Nutritional Needs of Surgical Patients	
<b>Chapter 9</b>	Wound Healing	
<b>Chapter 10</b>	Wound Infections and Antimicrobial Use	
<b><i>Surgical Methods and Perioperative Care</i></b>		
<b>Chapter 11</b>	Sterilization	
<b>Chapter 12</b>	Instrumentation	
<b>Chapter 13</b>	The Operating Room	
<b>Chapter 14</b>	Monitoring for Surgical Infection	

<b>Chapter 15</b>	Principles and Use of Energy Sources in Small Animal Surgery: Electrosurgery and Laser Applications	
<b>Chapter 16</b>	Suture Material, Tissue Staplers, Ligation Devices, and Closure Methods	
<b>Chapter 17</b>	Instrument and Tissue Handling Techniques	
<b>Chapter 18</b>	Surgical Hemostasis	
<b>Chapter 19</b>	Bandages and Drains	
<b>Chapter 20</b>	Biopsy General Principles	
<b>Chapter 21</b>	Anesthesia Principles and Monitoring	
<b>Chapter 22</b>	Anesthetic Practice for Existing Conditions	
<b>Chapter 23</b>	Fundamentals of Interventional Radiology and Interventional Endoscopy	
<b>Chapter 24</b>	Fundamentals of Laparoscopy and Thoracoscopy	
<b>Chapter 25</b>	Introduction to Oncologic Surgery for the General Surgeon	
<b><i>Neurosurgery</i></b>		
<b>Chapter 26</b>	Neurologic Examination and Neuroanatomic Diagnosis	
<b>Chapter 28</b>	Imaging of the Neurologic System	
<b>Chapter 29</b>	Pathogenesis and Physiology of Central Nervous System Disease and Injury	
<b>Chapter 36</b>	Anesthesia for Intracranial Surgery	
<b><i>Musculoskeletal System</i></b>		
<b>Chapter 38</b>	Tissues of the Musculoskeletal System	601-613
<b>Chapter 39</b>	Bone Biomechanics and Fracture Biology	613-649
<b>Chapter 40</b>	Open Fractures	649-654
<b>Chapter 41</b>	Internal Fracture Fixation	654-690
<b>Chapter 42</b>	External Skeletal Fixation	691-721
<b>Chapter 43</b>	Overview of Minimally Invasive Osteosynthesis Principles	721-737
<b>Chapter 44</b>	Bandaging, External Coaptation, and External Devices for Companion Animals	737-751
<b>Chapter 45</b>	Delayed Unions, Nonunions, and Malunions	752-761
<b>Chapter 47</b>	Osteomyelitis and Implant-Associated Infections	775-783
<b>Chapter 48</b>	Bone Grafts and Substitutes	783-794
<b>Chapter 68</b>	Arthritis	1265-1299
<b>Chapter 70</b>	Muscle and Tendon Disorders	1316-1317, 1319-1321
<b>Chapter 71</b>	Arthroscopy	1323-1331
<b>Chapter 73</b>	Osteochondrosis	1372-1380
<b>Chapter 74</b>	Gait Analysis	1385-1396
<b><i>Skin and Reconstruction</i></b>		
<b>Chapter 75</b>	Primary Wound Closure	1397-1409
<b>Chapter 76</b>	Open Wounds	1410-1421
<b>Chapter 81</b>	Burns	1495-1499

<b><i>Abdomen</i></b>		
<b>Chapter 83</b>	Spleen	1551-1557
<b>Chapter 84</b>	Abdominal Wall Reconstruction and Hernias	1564-1567
<b>Chapter 85</b>	Diaphragmatic Hernias	1592-1593
<b>Chapter 86</b>	Peritoneum and Retroperitoneum	1603-1616
<b><i>Digestive System</i></b>		
<b>Chapter 87</b>	Soft Tissues of the Oral Cavity	1637-1641
<b>Chapter 88</b>	Salivary Glands	1653-1655
<b>Chapter 89</b>	Mandibulectomy and Maxillectomy page	1663-1664
<b>Chapter 90</b>	Esophagus	1677-1680
<b>Chapter 91</b>	Stomach	1700-1704
<b>Chapter 92</b>	Small Intestine	1730-1737
<b>Chapter 93</b>	Colon	1761-1768
<b>Chapter 94</b>	Rectum, Anus, and Perineum	1783-1786
<b>Chapter 95</b>	Liver and Biliary System	1828-1834
<b>Chapter 96</b>	Hepatic Vascular Anomalies	1852-1859
<b>Chapter 97</b>	Pancreas	1886-1891
<b>Chapter 98</b>	Feeding tubes	1901-1902, 1915-1917
<b><i>Respiratory System</i></b>		
<b>Chapter 99</b>	Nasal Planum, Nasal Cavity, and Sinuses	1919-1920
<b>Chapter 100</b>	Palate	1935-1938
<b>Chapter 101</b>	Larynx	1946-1949
<b>Chapter 102</b>	Trachea and Bronchi	1963-1965
<b>Chapter 103</b>	Lungs	1983-1987
<b><i>Thorax</i></b>		
<b>Chapter 104</b>	Thoracic Wall	2001-2006
<b>Chapter 105</b>	Thoracic Cavity	2019-2027
<b><i>Cardiovascular System</i></b>		
<b>Chapter 106</b>	Cardiac Surgery	2049-2055
<b>Chapter 107</b>	Pericardial Surgery	2084-2088
<b>Chapter 108</b>	Vascular Surgery	2093
<b><i>Urogenital System</i></b>		
<b>Chapter 109</b>	Ovaries and Uterus	2109-2112
<b>Chapter 110</b>	Vagina, Vestibule, and Vulva	2130-2132
<b>Chapter 111</b>	Testes, Epididymides, and Scrotum	2142-2145
<b>Chapter 112</b>	Penis and Prepuce	2160-2161
<b>Chapter 113</b>	Prostate	2168-2170
<b>Chapter 114</b>	Kidneys	2184-2188
<b>Chapter 115</b>	Ureters	2202-2203
<b>Chapter 116</b>	Bladder	2219-2222

<b>Chapter 117</b>	Urethra	2234-2238
<b><i>Endocrine System</i></b>		
<b>Chapter 120</b>	Adrenal Glands	2281-2283
<b>Chapter 121</b>	Thyroid and Parathyroid Glands	2291-2293
<b><i>Ear</i></b>		
<b>Chapter 122</b>	Pinna and External Ear Canal	2309-2311
<b>Chapter 123</b>	Middle and Inner Ear	2328-2331

## SELECTED REFERENCES FOR LARGE ANIMAL SURGERY

- 1) Auer JA, Stick JA. Equine Surgery, Elsevier., (5<sup>th</sup> Ed), 2018\*.
- 2) Johnston S, Tobias K. Veterinary Surgery: Small Animal, Volume 1, Elsevier, (2<sup>nd</sup> Ed), 2018. *Chapters 1-18, 39, 45 and 48.*
- 3) Nixon AJ. Equine Fracture Repair, Wiley Blackwell, (2<sup>nd</sup> Ed), 2020. *Chapters 1-13, 43-49.*
- 4) Guyton AC, Hall JE. Textbook of Medical Physiology, W.B. Saunders Co., (13<sup>th</sup> Ed), 2016. *Chapters 6, 7, 8, 9 (pages 113-116), 11, 13, 14, 16, 17 (pages 212-213), 19 (pages 234-236), 25, 26, 27, 28 (pages, 362-365), 31, 34, 35, 37, 76, and 80.*
- 5) Cunningham J, Klein B. Textbook of Veterinary Physiology, W.B. Saunders Co., 2013. *Chapters 18-31.*
- 6) Lumb and Jones. Veterinary Anesthesia and Analgesia, Blackwell Publishing, (5<sup>th</sup> Ed), 2015. *Chapters 3, 4, 8, 9, 10, 11, 12, 16, 17, 29 (relevant large animal sections), chapters 46-49 and 51.*
- 7) Muir WW, Hubbell JAE. Equine Anesthesia: Monitoring and Emergency Therapy, Saunders, (2<sup>nd</sup> Ed), 2009.
- 8) Fubini SL, Ducharme NG. Farm Animal Surgery, W.B. Saunders Co., 2017. *Chapters 1-8 and 12-24 (initial relevant pages).*  
*Portions of Chapters 12-24 may be covered on the Phase I and Phase II examinations. See the representative divisions of Auer and Stick by page for examples of how, in each chapter, anatomy and physiology (Phase I) is split from diagnostics, treatment, and perioperative care (Phase II).*
- 9) McIlwraith CW, Nixon AJ, Wright I. Diagnostic and Surgical Arthroscopy in the Horse, Mosby Ltd, (4<sup>th</sup> Ed), 2014. *Chapters 1-3.*
- 10) Boothe DM. Small Animal Clinical Pharmacology and Therapeutics, Elsevier, (2<sup>nd</sup> Ed), 2011. *Chapters 6, 7, 29.*
- 11) Ragle CA. Advances in Equine Laparoscopy, Wiley-Blackwell, 2012. *Chapters 1-6.*
- 12) Theoret CL & Schumacher J. Equine Wound Management, John Wiley & Sons, (3<sup>rd</sup> Ed), 2017. *Chapters 1-5.*
- 13) Knowledge of basic and applied anatomy is assumed and should be reviewed in an appropriate text. For example: Dyce KM, Sack WO, Wensing CJG. Text book of Veterinary Anatomy, Saunders /Elsevier, (4<sup>th</sup> Ed), 2010.

\*Phase I portions of Auer and Stick. Please note that if no page numbers are given, the entire chapter is included.

<b><i>Equine Surgery, 5<sup>th</sup> Edition, Auer and Stick, 2018</i></b>		
<b>Chapter</b>	<b>Title</b>	<b>Pages (full chapter unless pages are noted)</b>
<b><i>Surgical Biology</i></b>		
<b>Chapter 1</b>	Shock: Pathophysiology, Diagnosis, Treatment, and Physiologic Response to Trauma	
<b>Chapter 2</b>	Systemic Inflammatory Response	
<b>Chapter 3</b>	Fluids, Electrolytes, Acid-base Therapy	
<b>Chapter 4</b>	Hemostasis, Surgical Bleeding, and Transfusions	
<b>Chapter 5</b>	Wound Healing	
<b>Chapter 6</b>	Metabolism and Nutritional Support of the Surgical Patient	
<b>Chapter 7</b>	Surgical Site Infection and Use of Antimicrobials	
<b>Chapter 8</b>	Regenerative Medicine	

<b><i>Surgical Methods</i></b>		
<b>Chapter 9</b>	Instrument Preparation, Antisepsis, and Disinfection	
<b>Chapter 10</b>	Preparation for Surgery: Decision Making/Operative Risk, Patient, Facility, Operating Team	
<b>Chapter 11</b>	Surgical Instruments	
<b>Chapter 12</b>	Surgical Techniques	
<b>Chapter 13</b>	Minimally Invasive Surgical Techniques	
<b>Chapter 14</b>	Cryosurgery	
<b>Chapter 15</b>	Lasers in Veterinary Surgery	
<b>Chapter 16</b>	Suture Materials and Patterns	
<b>Chapter 17</b>	Drains, Bandages, and External Coaptation	
<b><i>Recent Advances in Anesthesia</i></b>		
<b>Chapter 18</b>	Balanced Inhalation Anesthesia	
<b>Chapter 19</b>	Modern Injectable Anesthesia for Horses	
<b>Chapter 20</b>	Anesthesia and Analgesia for Foals	
<b>Chapter 21</b>	Recovery from Anesthesia	
<b>Chapter 22</b>	Complications of Inhalation Anesthesia and Their Management	
<b>Chapter 23</b>	Chemical Restraint for Standing Procedures	
<b>Chapter 24</b>	Equine Pain Management	
<b><i>Integumentary System</i></b>		
<b>Chapter 25</b>	Principles of Plastic and Reconstructive Surgery	
<b>Chapter 27</b>	Management of Superficial Wounds, Deep and Chronic Wounds, Sinus Tracts, and Fistulas	403-414
<b><i>Alimentary System</i></b>		
<b>Chapter 29</b>	Oral Cavity and Salivary Glands	440-443
<b>Chapter 30</b>	Esophagus	474-475
<b>Chapter 31</b>	Stomach and Duodenum	496-499
<b>Chapter 32</b>	Spleen and Liver	505-507, 512-514
<b>Chapter 35</b>	Jejunum and Ileum	536-540
<b>Chapter 36</b>	Cecum	575-577
<b>Chapter 37</b>	Large Colon	591-595
<b>Chapter 38</b>	Transverse and Small Colon	621-622
<b>Chapter 40</b>	Abdominal Hernias	645
<b><i>Respiratory System</i></b>		
<b>Chapter 42</b>	Overview of Upper Airway Function	
<b>Chapter 44</b>	Nasal Passages and Paranasal Sinuses	698-700
<b>Chapter 45</b>	Pharynx	710-712
<b>Chapter 46</b>	Larynx	734-735
<b>Chapter 47</b>	Guttural Pouch	770

<b>Chapter 48</b>	Trachea	797
<b>Chapter 49</b>	Thoracic Disorders	805
<b><i>Nervous System</i></b>		
<b>Chapter 50</b>	Anatomy and Physiology of the Nervous System	
<b>Chapter 52</b>	Pharmaceutical Considerations for Treatment of the Central Nervous System	859-861
<b>Chapter 53</b>	Vertebral Column and Spinal Cord	880-881
<b>Chapter 55</b>	Peripheral Nerve Injury	900-906
<b><i>Eye and Adnexa</i></b>		
<b>Chapter 56</b>	Surgery of the Globe and Orbit	910-911
<b>Chapter 57</b>	Adnexal Surgery	927-930, 947, 949-950
<b>Chapter 58</b>	Surgery of the Ocular Surface	956-961
<b>Chapter 59</b>	Intraocular Surgery	981-982
<b><i>Reproductive System</i></b>		
<b>Chapter 60</b>	Testis	994-997
<b>Chapter 61</b>	Penis and Prepuce	1034-1038
<b>Chapter 62</b>	Vulva, Vestibule, Vagina, and Cervix	1065-1066
<b>Chapter 63</b>	Uterus and Ovaries	1083
<b><i>Urinary System</i></b>		
<b>Chapter 65</b>	Kidneys and Ureters	1115-1117
<b>Chapter 66</b>	Bladder	1129-1130
<b>Chapter 67</b>	Urethra	1145-1146
<b><i>Diagnostic Imaging</i></b>		
<b>Chapter 68</b>	Radiography	
<b>Chapter 69</b>	Ultrasonography	
<b>Chapter 70</b>	Nuclear Scintigraphy	
<b>Chapter 71</b>	Computed Tomography	
<b>Chapter 72</b>	Magnetic Resonance Imaging	
<b><i>Musculoskeletal System</i></b>		
<b>Chapter 73</b>	Diagnostic and Regional Surgical Anesthesia of the Limbs and Axial Skeleton	
<b>Chapter 75</b>	Bone Biology and Fracture Healing	
<b>Chapter 76</b>	Metallic Instruments and Implants	
<b>Chapter 77</b>	Principles of Fracture Treatment	
<b>Chapter 78</b>	Bone Grafts and Bone Replacements	
<b>Chapter 79</b>	Synovial Joint Biology and Pathobiology	
<b>Chapter 80</b>	Medical Treatment of Joint Disease	
<b>Chapter 84</b>	Diagnosis and Management of Tendon and Ligament Disorders	1411-1420

<b>Chapter 85</b>	Biology and Management of Muscle Disorders and Diseases	1445-1447
<b>Chapter 86</b>	Synovial and Osseous Infection	1458-1460, 1463-1464
<b>Chapter 89</b>	Osteochondritis Dissecans	1509-1511, 1515-1521
<b>Chapter 90</b>	Subchondral Cystic Lesions	1528-1529
<b>Chapter 92</b>	Phalanges and the Metacarpophalangeal and Metatarsophalangeal Joints	1587-1588
<b>Chapter 93</b>	Third Metacarpal and Metatarsal Bones	1618
<b>Chapter 94</b>	Vestigial Metacarpal and Metatarsal Bones	1636
<b>Chapter 95</b>	Carpus	1648
<b>Chapter 96</b>	Radius and Ulna	1667, 1675-1676
<b>Chapter 97</b>	Humerus	1690
<b>Chapter 99</b>	Tarsus	1710-1711
<b>Chapter 100</b>	Tibia	1736
<b>Chapter 101</b>	Stifle	1747-1748
<b>Chapter 103</b>	Temporomandibular Joint Disorders	1789-1790
<b>Chapter 104</b>	Craniomaxillofacial Disorders	1794
<b>Chapter 105</b>	Postoperative Physiotherapy for the Orthopedic Patient	

## PHASE I EXAMINATION BLUEPRINT

SECTION I. Questions will pertain to surgical topics and conditions in:

- a) Small Animal Examination: Domestic canine and feline, and non-species-specific
- b) Large Animal Examination: Equine, food animal, small ruminant, camelid, and non-species-specific.

SECTION II. The test questions are distributed across four disciplines. The approximate percentage of questions devoted to each of several knowledge areas within each discipline is shown below:

Small Animal Discipline	% of Small Animal Examination
<b>Basic Science</b> <ul style="list-style-type: none"> <li>• Anatomy 14%</li> <li>• Physiology 12%</li> <li>• Pathobiology 10%</li> </ul>	
<b>Pharmacology</b> <ul style="list-style-type: none"> <li>• Antimicrobials 5%</li> <li>• C-V/Autonomic Drugs 4%</li> <li>• Fluid Therapy 5%</li> <li>• Regenerative Therapy 1%</li> </ul>	
<b>Principles of Anesthesia / Analgesia and Pain Management</b> <ul style="list-style-type: none"> <li>• Anesthetic Equipment 3%</li> <li>• General Anesthesia 4%</li> <li>• Local Anesthesia 3%</li> <li>• Analgesia 4%</li> <li>• Anti-Inflammatory Drugs 3%</li> </ul>	
<b>Surgical Principles</b> <ul style="list-style-type: none"> <li>• Tissue Handling / Hemostasis 8%</li> <li>• Asepsis 8%</li> <li>• Wound Healing 8%</li> <li>• Instrumentation / Implants 8%</li> </ul>	

<b>Large Animal Discipline</b>	<b>% of Large Animal Examination</b>
<b>Basic Science</b> <ul style="list-style-type: none"> <li>• Anatomy 16%</li> <li>• Physiology 11%</li> <li>• Pathobiology 9%</li> </ul>	
<b>Pharmacology</b> <ul style="list-style-type: none"> <li>• Antimicrobials 6%</li> <li>• Analgesics 2%</li> <li>• Anti-Inflammatory Drugs 2%</li> <li>• Fluid Therapy 4%</li> <li>• Regenerative Therapy 2%</li> </ul>	
<b>Principles of Anesthesia / Analgesia and Pain Management</b> <ul style="list-style-type: none"> <li>• Anesthetic Equipment 2%</li> <li>• General Anesthesia 6%</li> <li>• Local Anesthesia 3%</li> <li>• Pain Management 4%</li> </ul>	
<b>Surgical Principles</b> <ul style="list-style-type: none"> <li>• Tissue Handling / Hemostasis 9%</li> <li>• Asepsis 6%</li> <li>• Wound Healing 8%</li> <li>• Instrumentation / Implants 10%</li> </ul>	

**SECTION III.** Within the Basic Science discipline, questions may focus on any of the systems listed below:

- Gastrointestinal
- Cardiovascular
- Respiratory
- Urogenital
- Musculoskeletal
- Neurology/Special Senses
- Integumentary
- Endocrine (SA only)
- Non-System Specific

Each question can be assigned to one knowledge area in a discipline. For example, a question might involve cardiovascular anatomy.

## SAMPLE QUESTIONS

Sample Phase I examination questions are available on the ACVS web site at [www.acvs.org/residents/phase-I-sample-questions](http://www.acvs.org/residents/phase-I-sample-questions).

## DETERMINATION OF PASSING SCORE

Prior to test administration, the passing score is determined for the Phase I examination using a procedure called "criterion-referencing." In a criterion-referenced test, the decision about whether a given candidate passes or fails is based on whether he or she demonstrates criterion level job knowledge and skill on the examination, rather than a predetermined percentage of the candidates taking the examination at that time. The procedures for setting a criterion-referenced passing score are well established. The process involves the collection of judgments regarding the difficulty of each examination item. Difficulty judgments for the examination items are estimates of the probability that a minimally-qualified candidate will answer each item correctly. In this context, a "minimally-qualified" candidate possesses just enough knowledge and skill to be a Diplomate of the ACVS. Difficulty judgments are made by a mix of practitioners and academicians serving on the Examination Committee and Board of Regents. The criterion-referenced passing score of the ACVS Phase I examination is never raised after the test has been administered.

## REPORTING OF RESULTS

Results of the Phase I examination are customarily emailed to all candidates within six (6) weeks after completion of the examination. Results will indicate whether the candidate passed or failed the Phase I examination. For candidates who fail, the feedback report will include performance on the various topical areas within the examination.

An updated process by which a candidate can respond to the results determination by the American College of Veterinary Surgeons for the Phase I Surgical Knowledge Examination will be available by January 1, 2021.

## EXAMINATION SECURITY

### 1) **Procedures in the Event of Unethical Behavior**

- a) The validity of results awarded candidates for their performance on the American College of Veterinary Surgeons examination is protected by every means available. The American College of Veterinary Surgeons will not report results which it has determined are invalid (i.e., do not represent a reasonable assessment of the candidate's knowledge or competence sampled by the examination). The performance of all candidates is monitored and may be analyzed statistically for purposes of detecting invalid results.
- b) If evidence by observation or statistical analysis suggests that one or more candidates' results may be invalid because of unethical behavior by one or more candidates prior to, during, or after the examination, the American College of Veterinary Surgeons may withhold the results pending further investigation. The affected candidate(s) will be so notified.
- c) Examples of unethical behavior affecting the validity of results or that would result in the withholding of results pending further investigation would include, but not be limited to the following: (i) copying of answers from another candidate; (ii) permitting one's answers to be copied; (iii) unauthorized possession, reproduction, or disclosure of materials, including examination questions or answers from the current or previous years' examinations, before, during, or after the examination; (iv) use of unauthorized sources for information during the examination (i.e. notes, electronic devices, or other people) regardless whether

or not they were used as such; and (v) any other evidence indicating the security of the examination had been breached.

- d) In the event candidates are observed engaging in unethical behavior, the proctor(s) will make carefully written notes, including the party(ies) involved, time, examination section, etc., but will not disrupt the examination by confronting the candidate(s). Notification of unethical behavior will be at the earliest possible time following completion of the examination. The candidate(s) will be advised of the procedure for imposing sanctions and informed that results may be withheld as invalid.
- e) On analysis of all available information in such circumstances, the American College of Veterinary Surgeons will make a determination as to the validity of the results in question and will notify the affected candidate(s). If it is determined that the results in question are invalid, they will not be released. Notification of that determination may be made to legitimately interested third parties.
- f) In such circumstances, the American College of Veterinary Surgeons will make every effort to withhold the results of only those candidates directly implicated in the unethical behavior. In some instances, the evidence of unethical behavior is sufficiently strong to cast doubt on the validity of all results, and this evidence may not enable the American College of Veterinary Surgeons to identify the particular candidates involved therein. In such circumstances, the American College of Veterinary Surgeons reserves the right to withhold the results of candidates not directly implicated in the unethical behavior and, if necessary, require such candidates to take an additional examination at a later date under conditions that will ensure the validity of all results.
- g) Candidates or other persons who are directly implicated in an unethical behavior affecting the validity of the examination results are subject to additional sanctions, including being barred permanently from all future examinations, termination of participation in an ongoing examination, invalidation of results of the examination, withholding or revoking certification, being prosecuted for violation of copyright laws, or other appropriate action. Candidates or other persons subject to such additional sanctions will be provided with written notice of the charges and an opportunity to respond to such charges in accordance with the procedures set forth in the *Procedure or Imposition of Sanctions on Candidates Accused of Unethical Behavior* section of this information pamphlet.
- h) Candidates or other persons who engage in other forms of unethical behavior, which may not directly affect the validity of examination results, are also subject to the foregoing additional sanctions. Examples of such unethical behavior include, among other things: false statements to or submission of falsified documents to the American College of Veterinary Surgeons; the use of any falsified American College of Veterinary Surgeons' documents or the submission of such documents to other persons; or the offer of any financial or other benefit to any persons, officer, employee, proctor, or other agent or representative of the American College of Veterinary Surgeons in return for any right, privilege, or benefit which is not usually granted by the American College of Veterinary Surgeons to other similarly situated candidates or persons. Candidates or other persons subject to such additional sanctions will be provided with written notice of the charges and an opportunity to respond to such charges in accordance with the procedures set forth in the *Procedure or Imposition of Sanctions on Candidates Accused of Unethical Behavior* section of this information pamphlet.

## 2) **Procedure or Imposition of Sanctions on Candidates Accused of Unethical Behavior**

- a) If the American College of Veterinary Surgeons has reason to believe that a candidate engaged in unethical behavior which may affect the validity of any examination results or in any other unethical

conduct, the American College of Veterinary Surgeons shall provide written notice to the accused which will include: (i) the suspected unethical activity; (ii) the opportunity to defend against the charges in writing or at a hearing before a Special Committee of the American College of Veterinary Surgeons; and (iii) the sanction or sanctions which the American College of Veterinary Surgeons may impose if the accused fails to defend against the charges or, if after considering the defense, the Special Committee determines that the accused actually engaged in unethical behavior.

- b) Within twenty (20) days after receiving aforementioned notice, the accused shall advise the Chief Executive Officer of the American College of Veterinary Surgeons, in writing, whether he or she wishes to defend against the charges and, if so, whether he or she wishes to make such a defense in writing or at a hearing. If the accused fails to respond, the American College of Veterinary Surgeons may impose on the accused any of the sanctions identified in the Examination Contract.
- c) Within twenty (20) days after receipt of the accused's request for an opportunity to defend against the charges, the Chief Executive Officer of the American College of Veterinary Surgeons shall provide the accused with a written summary of the incriminating evidence, including copies of any relevant documentary evidence. If the accused has requested an opportunity to defend against the charges in writing only, the accused shall file his or her written defense with the American College of Veterinary Surgeons within thirty (30) days after issuance of the Chief Executive Officer's written summary of evidence. The Special Committee of the American College of Veterinary Surgeons shall issue its written decision as soon as possible thereafter. If a hearing has been requested, the American College of Veterinary Surgeons shall schedule the hearing at a mutually convenient time and place before a Special Committee within thirty (30) days after issuance of the American College of Veterinary Surgeons' written summary of evidence, and the Special Committee shall issue its written decision as soon as possible thereafter.
- d) A Special Committee consisting of three (3) Diplomates appointed by the Chair of the Board of Regents of the American College of Veterinary Surgeons, who were not involved in the investigation of the allegations against the accused, shall rule on the accused's defense and, if necessary, preside at the hearing. A transcript of the hearing, if any, shall be kept.
- e) The written decision of the Special Committee may be appealed in writing by the accused to the entire Board of Regents of the American College of Veterinary Surgeons within fifteen (15) days of the accused's receipt of such decision. The entire Board of Regents will review all of the evidence considered by the Special Committee, but it will not consider any evidence not previously presented to the Committee. The entire Board of Regents may affirm or reverse the decision of the Special Committee, remand the matter to the Special Committee for further consideration with precise instruction as to the basis of such reconsideration, or modify the sanctions imposed by the Special Committee. No person who served on the Special Committee shall vote or otherwise participate in the Board of Regents' review of the Special Committee's written decision.
- f) All notices or other correspondence directed to the American College of Veterinary Surgeons or the Special Committee should be sent to the office of the American College of Veterinary Surgeons, 19785 Crystal Rock Drive, Suite 305, Germantown, MD 20874-4700.