

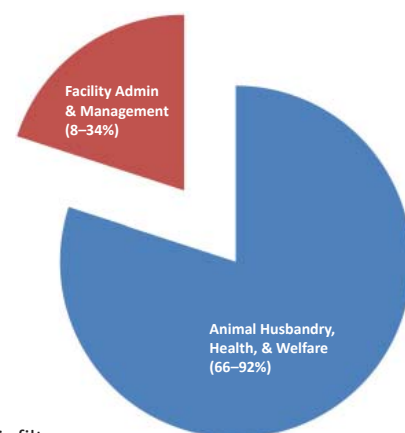
# ALAT Exam Content Outline

This outline is intended as both a teaching guide for instructors and a study guide for exam candidates. However, formal classroom study is not sufficient preparation for taking the certification exam. Work experience in an animal facility is also necessary for exam preparation, and in fact is one of the exam eligibility requirements. Ideally, work experience should include rotation through all areas of the animal facility to give the most opportunity for developing skills and knowledge related to a variety of species and work functions.

## Exam Question Topic Domains

The chart at right shows the general topic domains covered on the ALAT certification exam, plus the percentage of exam questions covering each domain. In the outline below, percentages in parentheses indicate the percentage of questions included within each of the domains of the certification exam. Topic examples listed under subdomains are not inclusive.

Reference to species-specific information requires knowledge about the animal species listed by the CRB: amphibians, birds, cats, cattle, dogs, ferrets, fish, gerbils, guinea pigs, hamsters, horses, invertebrates, mice, nonhuman primates, rabbits, rats, reptiles, sheep/goats, swine, and other less commonly used laboratory animal species. Refer to the *ALAT Training Manual* for information on these species.



## Animal Husbandry, Health, & Welfare (66–92%)

### Identification of Animals (7–11%)

- Species recognition
- Strain identification
- Line/subline identification
- Sex differentiation
- Identification techniques and interpretation (ear notching/punching, tattooing, microchipping)

### Species Specifics (7–11%)

- Anatomy and physiology
- Natural habitats/environment
- Taxonomy (common names, scientific names)
- Behavior (barbering, incompatibility)
- Identification of normal vs abnormal characteristics

### Breeding (3–7%)

- Housing/environmental requirements (light cycles, nestlets, nesting boxes)
- Pregnancy recognition (palpation, diagnostic tests, visual signs)
- Terminology and nomenclature (knock-out, inbred, outbred)
- Complications (dystocia, prolapse, retained placenta)

### Nutrition (4–8%)

- Food characteristics (form, textures, quality)
- Handling of food and water (dispensing, decontamination)
- Quality control of food and water (storage, analysis, contamination, milling date)
- Animal feeding behaviors and requirements (ground feeders, upright feeders, feed availability)
- Food supplements (vitamins, minerals, administration, mill date)
- Species-specific nutritional requirements
- Water quality and delivery systems (potable water, reverse osmosis, acidification, equipment maintenance)

### Husbandry Practices (17–21%)

- Environmental monitoring and control for macro- and microenvironment (temperature, humidity, ammonia, lighting)
- Caging types (squeeze, transport, metabolic)
- Caging/housing materials (polycarbonate, stainless steel)
- Species-specific housing requirements (resting boards, perches)
- Space requirements (cages, stalls, runs, number of animals per cage)
- Bedding (types, amount, quality, handling, storage)
- Special housing areas (quarantine, isolation, barrier, containment)
- Primary enclosure and bedding change frequency (regulated and nonregulated species)

- Ventilated racks and air filters
- Physical restraint/handling and transportation (techniques, equipment, precautions, food/water requirements)

### Sanitation, Disease Prevention and Control (12–16%)

- Sanitization agents (cleaning chemicals, disinfectants, sterilants, required concentrations)
- Decontamination methods and procedures (manual and mechanical methods, sterilization techniques)
- Pest/vermin recognition (warning signs)
- Personal hygiene (handwashing, showering)
- Aseptic techniques
- Containment and barrier techniques and facilities
- Protective equipment and clothing
- Biosecurity and disease prevention (animal inoculation, parasite control, sentinel program, pet ownership, disease transmission)

### Clinical, Health and Research Procedures (4–8%)

- Medical/veterinary/scientific terminology
- Animal health considerations (signs of stress, disease, weight gain or loss, death, confirmation of death requirements)
- Treatment techniques (routes of administration for medications and euthanizing agents; euthanizing common lab rodents)

### Formulas and Calculations (1–5%)

- Temperature conversion (Fahrenheit, Celsius)
- Weights and measures (pounds, ounces, milliliters, millimeters, cubic centimeters)
- Dilution calculations

### Animal Welfare (7–11%)

- Ethical treatment of animals
- Federal, state, and local regulations, industry guidelines (*The Guide*), and institutional policies
- Environmental enrichment needs
- Public awareness (media portrayal, public perception)
- Acclimation period
- Identification of species-typical behavior vs research-induced behavior

## Facility Administration & Management (8–34%)

### Documentation and Record Maintenance (2–6%)

- Institutional Animal Care and Use Committee (IACUC) records
- Animal health records
- Regulatory records (USDA, PHS, FDA, GLP)
- Monitoring logs/task sheets

### Data Collection, Analysis and Interpretation (0–4%)

- Data entry procedures
- Data collection techniques (barcode reader, paper log, graph charts)
- Data analysis (recognition of condition changes, such as weight gain or loss)

### Fiscal Management (0–3%)

- Purchasing procedures
- Quality assurance of items received

### Facilities Operations and Management (0–4%)

- Equipment maintenance
- Traffic patterns (clean and dirty corridors, room care sequence)
- Procedures for reporting abnormal environmental parameters
- Inventory systems (feed, bedding, equipment)
- Rotation policies (rotating cages)
- Facility design features (sloping floors, absence of windows)
- Waste disposal (procedures, regulations, documentation)
- Security (security systems; breach prevention, response, and reporting)

## ALAT Reference List

The publications listed below are referenced in the ALAT test item data bank, which contains all test questions for the ALAT exam. New questions are continually added to this bank, and the reference list is adjusted as needed. Check the AALAS website often for the most up-to-date list. To obtain any of the publications in this list, contact your bookstore, the publisher, or the AALAS office. Resources may be located by the ISBN number listed at the end of each reference. Government publications can be located online. Please note, however, that familiarity with the publications on this list does not guarantee a passing score on the ALAT exam. Additional suggested readings are listed in the ALAT manuals and in the AALAS “Additional Readings for Professional Development” list. These publications should be consulted and used as sources of information and for continued education.

References are not listed in order of importance.

- *ALAT Training Manual*. American Association for Laboratory Animal Science. 2009
- *Guide for the Care and Use of Laboratory Animals, 8th edition*. National Research Council. Institute for Laboratory Animal Resources. National Academy Press, Washington, DC. 2011. ISBN 0-3090-5377-3

### Occupational Health and Safety (2–6%)

- Personal protective equipment (respirators, gloves, safety glasses)
- Safety equipment and procedures (fire extinguishers, alarms, bite and scratch kits, first aid)
- Personnel health surveillance/maintenance (serology banking, vaccinations, TB testing)
- Handling, storage, and disposal of hazardous waste (biohazards, chemical, radiation)
- Environmental hazards (warning signs)
- Emergency procedures (evacuation plans, unexpected hazards, emergency contacts)
- Species-specific zoonotic risks and diseases
- Ergonomics (proper lifting technique, repetitive motion)

### Employee Management and Training (0–3%)

- Organizational structure (chain of command, communication)

### Interpersonal Relations (4–8%)

- Communication (verbal, written, listening)
- Conflict resolution (grievance committee)
- Time management skills and coordination
- Institutional policies (sexual harassment, diversity awareness, violence in the workplace)

## Sample Exam Questions

You may see questions like these on your certification exam. Note that each question has one correct answer and three distracters. Correct answers are listed in bold.

- 1. The recommended method for permanently identifying a monkey is:**
  - a. Ear punch
  - b. Collar with tag
  - c. Leg band
  - d. Tattoo**
- 2. Which cage has a rotating wheel that moves when the animal runs on it?**
  - a. A squeeze cage
  - b. An exercise cage**
  - c. A metabolism cage
  - d. A suspended cage
- 3. A process that kills all living organisms is called:**
  - a. Sanitation
  - b. Disinfection
  - c. Sterilization**
  - d. Cleaning