

Public Corporate Clerkship:

“Shelter Animal Behavior Modification”

A Literature Review Analysis, MDL socialization proposal, VMCVM course proposal

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Public Corporate Clerkship Project Description

I will research and appraise publications exploring the impact of human-animal interaction in shelter and kenneled animals' behavior and adoption trends. I will research and draft an analysis of the general wellness of teaching animals housed long-term with limited human interaction. I will synthesize evidence-based medicine into a proposal for improved VMCVM kennel procedures regarding animals' mental and physical stimulation and socialization. I will structure quantifiable evidence supporting the need for improved socialization protocols. I will extrapolate these behavior modifications into established standards of care for teaching animals within VMCVM. I will prioritize animal comfort and anxiety in modifying existing housing and socialization of teaching animals to improve their quality of life, comfort, and compliance in veterinary student techniques laboratories. I will evaluate available grants and funding to identify support for implementing these modifications to shelter animals. I plan to research via literature, in-person site visits of VMCVM and generate deliverables based on tangible primary and secondary research to improve the behavior and comfort of teaching animals. This shall provide the framework to support other teaching hospitals' kenneled animals and possibly shelter animals.

Deliverables are underlined, in addition to research synthesized which will be documented in deliverable format. I will maintain a daily log of my research and work. I will generate a brief about what I learned during my PC externship and what I got out of it.

Deliverables

- **Analysis of Published literature: Human-Animal Interactions**
 - Implications for research and improvements for CENTAUR & MDL
- **Grants available for CENTAUR funding sources**
- **MDL Behavior Assessment** : For daily behavior assessments of teaching canines

Human-Animal Relationship: A Literature Analysis

Background

It has been known that humans and animals share their environment. The Earth is made up of several biological kingdoms: generally; Bacteria, plants, fungi, protozoa, and animals. Occasionally more classifications exist, depending on the country, which adopts a 4-7 kingdom classification system. However, Animalia is a Kingdom which contains humans (*Homo sapiens*) as well as what society colloquially refers to as animals. In the context of understanding human-animal relationships, these animals are wild or domesticated animals seen in their various environments, or in captivity within zoos or households. In science, humans and animals are evolved from a common ancestor, and thus possess similar characteristics, albeit adapted for their current environment and tasks. Humans are considered more intelligent than, say, a dog. They are more intellectually advanced; and, from what humans understand, can comprehend, and interpret their own cognition as well as that of other animals. This is a unique feature of 'higher animals' meaning humans (Sherwood et al.). However, along with this, comes the knowledge that the human brain is interpreting its own function and deducing the capacity and understanding of others' brains - introspection. While humans are an advanced species due to our ability for introspection (self-description of our thoughts and feelings) as well as complex reasoning and self-awareness, some animals possess these traits, too (Caceres et al.). Humans are innately different from even our closest relatives for our ability to plan for the future, and the possible presence of unique cells in humans which stimulate human planning or motivation or reinforcement (Sousa et al.). It is likely a combination of our behavior, biochemistry, and these traits which set humans apart.

Regardless, humans and animals therefore interact differently than animals with one-another. There is a mutual bond of a human's relationship with an animal, and that of an animal's with a human, which can be dated back 500,000 years at least. The use of the term human-animal bond is newer, first used in 1979 (Hines). However, animals have long been utilized in human therapy as an alternative modality (O'Haire) to therapy, as well as in therapy and service/work. It has been shown to improve quality of life in humans and has measurable benefits in health. Working dogs have a quantifiable impact on human lives by offering a direct resource/guidance or benefit (Wilsson and Sinn). Companion animals also satisfy health benefits, mentally and emotionally. Service animals can offer physical benefits and are trusting of their companion or handler (Merola, et al.). Animals bring joy in the way a toy brings joy to a child. They are puzzling to us and offer a source of entertainment when they act in an unexpected way. They offer physical and mental health benefits including psychological health promotion. Dogs have been domesticated for human companionship. Their domestication has altered their behavior and personality. (Svartberg and Forkman).

Kenneled Canines

Given these known benefits of human-animal interaction, it would be expected that isolated animals are given this same benefit. Kenneled animals are isolated and housed in cages or runs while in breeding facilities, shelters, research laboratories, or teaching hospitals. They receive minimal human interaction in comparison to an owned companion animal. In free-

ranging dogs, and owned dogs with strategically limited human interaction or supervision, the dogs exhibited behavior more closely related to strays (Rubin and Beck). These dogs were more likely to explore further from their 'neighborhood' when they had minimal interaction with humans. This may demonstrate a level of domestication when dogs have stronger/prolonged relations with humans. However, there is not much tangible research into the extent to which human interaction plays in these free-ranging dogs compared with companion dogs primarily housed indoors. This is in part due to the difficulty of directly comparing these groups with minimal variables. However, to better understand the social impact of human ownership on a dog, strays and owned dogs would need to be directly observed and compared with several means of quantification.

One method to compare these groups which could be explored, is the use of behavior tests, as explored by Lind et al, in 2016. While they utilized these tests to contrast stress and behavior in dogs at the veterinary clinic, a standardized measurement would be optimal to allow for reproducibility (Lind et al.). A large factor in determining a dog's comfort in a new environment is their behavior, their desire to play, and their reception of treats (Edwards et al.). The investigation of canine stress in veterinary environments has been studied, but several studies validate different assessment protocols.

Evaluating Stress, Pain, and Behavior

In fear-free veterinary medicine, a nervous, anxious, or fearful dog will not take food treats readily (Westlund). This is a significant indicator of discomfort in the clinic. However, this tendency should also be utilized when dogs are placed in new environments - such as at shelters, breeding facilities, research laboratories, or teaching laboratories [specifically: Virginia-Maryland Regional College of Veterinary Medicine's Multidisciplinary Laboratory with care provided by the Teaching and Research Animal Care Support Service (VMCVM's MDL and TRACCS)]. As indicated by Westlund as well as a pilot study by Rigterink et al, in the Journal of Veterinary Behavior, anxious animals that are handled may show defensive aggression. Those with fear-based aggression may be more predisposed to pathologies or disease processes as demonstrated by abnormal vitals (Rigterink et al.). A dog is prone to predation if pain, anxiety, or stress is evident. Pain and stress are also similar in their physiologic impact (Lind et al.). A dog innately protects themselves from stressful situations, and masks fear or pain as a survival instinct. Pain scales as utilized in many veterinary environments rely on a variety of criteria for this reason. Most commonly: psychological and behavioral appearance as well as response to interaction and tension are evaluated (Mich et al).

The World Small Animal Veterinary Association (WSAVA) entrusted a Global Pain Council (GPC) with the development of pain assessment and treatment guidelines for a universal pain evaluation in veterinary healthcare (Mathews et al.). Because of the association between pain and stress, a distressed dog will receive a positive or higher pain score. It is the ethical responsibility of veterinarians and veterinary staff to recognize and intervene to minimize suffering. The WSAVA guidelines include early nutrition, disease prevention, and pain management to promote animal health and welfare.

The ideal assessment also includes behavior and personality (strong indicators of canine comfort) as well as pain/stress and anxiety. It is beneficial to assess behavioral traits: playfulness, curiosity, sociability, aggression, and tendency to be chased (Svartberg and Forkman). This study found that these behaviors (excluding aggression) were correlated. This supports the belief that underlying fear drives poor behavior in a dog with unrecognized fear, anxiety, and stress (FAS). Early evaluation of an MDL dogs' behavior and stress (as evaluated through pain scales) can better predict their comfort in the environment. This leads to safer human-animal interactions and minimizes negative reactions (aggression) toward strangers (Merola et al.). Cooperative and comfortable canines may then interact with each other and students. The goal is a minimal-stress environment and positive experiences for both humans and animals. These measurements should be repeated daily in addition to when a dog's behavior, demeanor, or FAS noticeably change.

Socialization & Stimulation

Socializing the MDL dogs improves their chances of adoption after release from the program due to proven improvement in behavior and handling following socialization efforts. With increased socialization, the dogs can demonstrate more positive behavioral outcomes compared to dogs with less, as demonstrated in a 2006 study, among others. Shelter dogs from a Humane Society were socialized including training and handling with inmates (considered strangers), and bloodwork was compared to that of control dogs as well as before socialization. Those with socialization programs demonstrated more positive behavior - less jumping, vocalizing, yawning (indicative of stress) than their typical shelter housing. The socialized dogs also showed greater stress regulation as measured by ACTH and cortisol levels (Hennessy et al).

Dogs housed in shelters and humane societies are provided necessities for what is ideally a short-term stay in the shelter. A shelter dog is exposed to staff and volunteers for collectively several hours per day. They are discouraged from barking through the 'cry it out' method or on occasion, counter-conditioned against through with food treats (Zurlinden et al.). This discourages barking and also normalizes them to frequent visitors in the kennel area. However, in a shelter, these visits involve minimal interaction despite their frequency. Shelters have volunteers and staff passing through the area hourly.

At the VMVM MDL, the dogs have less frequent interaction, but instances are prolonged and invasive. These dogs are taken from their accustomed habitat and placed into a new one. The kennels at the MDL resemble a shelter - there is a bed, freely available clean water, toys, and canine neighbors to provide some companionship, albeit through concrete walls. The dogs are given baths as necessary and given medical attention/intervention for any diseases or parasites noted during their stay. They are given between one and three short walks daily and allowed to interact with each other for a short period of time while their cage is cleaned. When these dogs are given more human interaction it is for veterinary student training - to practice clinical examinations and procedures. The dogs are restrained and handled for longer periods of time than they're accustomed to and stimulated in fearful situations. Thus, while they experience less frequent interaction, these dogs naturally tend to exhibit more fear. They have tended to be

more fearful and anxious during their stay, and less tolerant of student interaction. They also are assigned to a student, but without regard for their personality. When a shelter dog is adopted, the adoptee(s) are interviewed by staff to ensure they are suitable owners that will match the energy and personality of the dog. This allows for both the human and animal to be happy in their cohabitation, and to ensure the dog will be safe and enriched as suited for their breed and personality (Svartberg and Forkman). Additionally, it enables the owner to be sure they are matched with a dog that thrives in a similar lifestyle (e.g., sedentary quiet rural lifestyles versus busy urban homes).

There is some conflicting evidence, that dogs exhibit greater fear of inanimate (non-social) objects and stimuli than social (human interaction) (Pritchett et al.). Thus, it would be better to encourage more timid and less sociable dogs to participate in the program and encourage human interaction and social stimulation. However, these dogs may also do poorly in being suddenly transitioned to a new environment (shelter to MDL).

Mental Stimulation in the MDL

It could be concluded from most publications that socialized and un-anxious dogs would be better suited for the MDL research and teaching program. That they would be more tolerant of the type of stimulation experienced during teaching and research. But these dogs are also more likely to be adopted quickly and are less favorable to lend to a teaching program when they might be adopted quickly if remaining in shelters. Further, the teaching program can provide an opportunity to socialize and even train the dogs for human handling, and ready them for human bonding. Also, they're more likely to be adopted because individuals who are willing and able to adopt are given the chance to bond (Korbelik et al.). The final aspect of mental stimulation is environmental enrichment. The housing circumstances offer the necessities in addition to toys, and physical and social stimulation. Prolonged periods kenneled can increase animal and human aggression in canines due to inappropriate stimulation (Haug). To continue daily mental stimulation, it would be ideal to offer more stimulating toys and treats specific for dogs. This is dependent upon budget but can even increase behavioral adaptation. Enriching toys require problem-solving, and often dispense food treats to maintain engagement.

In summary, there is a need for further research into an ideal canine candidate for teaching programs, as well as the optimal amount of stimulation and socialization. There is also a gap in the literature as far as measurable quantified data collected on the correlation between socialization and adoption rates among sheltered dogs. The MDL program offers an opportunity to complete a clinical study of these rates, through a structured socialization program with veterinary oversight. CENTAUR can also capitalize on this opportunity by collecting data from these dogs for research into the human-animal bond. Lastly, implementing standardized assessments for daily behavioral and stress analysis, as well as strict protocols for socialization and enrichment in the MDL dog population will benefit all. There are many adaptations and management procedures currently in place; including the use of harnesses, soothing music, spacious and isolated cages. These existing standards of care should be continued to promote safe handling and minimize stress. However, these additional interventions would improve the behavioral welfare of these dogs. These modifications will prioritize comfort and socialization

while teaching veterinary students. These implementations will increase their chances of adoption with socialization and stimulation, to provide for improved animal-human relationships at the VMCVM and beyond.

MDL Dog Behavior and Stress Assessment

MDL Canine Behavioral Assessment

Please complete this form **daily**. Be as descriptive as possible to assist yourself and technicians who may interact with your MDL dog. **Grading scale: 0 (great) to 4 (poor).**

1. Distance observation:

- a. **Resting demeanor:** [Alertness, anxiety (licking), withdrawal, dullness, aggression]

0-----1-----2-----3-----4

Describe:

- b. **Posture:** [Resting comfortably, unsettled, grimacing, grimace, depressed]

0-----1-----2-----3-----4

Describe:

- c. **Mood:** [Confident, distressed, vocalizing, depressed]

0-----1-----2-----3-----4

Describe:

2. Direct interaction:

- a. **Curiosity:** [Exploration, interest, avoidance, none, fear, aggression]

0-----1-----2-----3-----4

Describe:

- b. **Playfulness:** [Happiness, engagement, exploration, interest, none]

0-----1-----2-----3-----4

Describe:

- c. **Socialization:** [Playing, training, handling, cooperation, greeting]

0-----1-----2-----3-----4

Describe:

- d. **Vitality & Mobility:** [Energy, activity, ease of lying/jumping, comfort]

0-----1-----2-----3-----4

Describe:

- e. **Chase-proneness:** [Chase, follow, grab]

0-----1-----2-----3-----4

Describe:

- f. **Treat test:** [Readily takes, hesitates, takes in solitude, ignores]

0-----1-----2-----3-----4

Describe:

g. **Touch reaction:** [normal, no reaction, flinching, pain]

0-----1-----2-----3-----4

Describe:

3. **Vitals and other observations:**

a. **Temperature:**

b. **Pulse:**

c. **Respiration (resting):**
if panting, attempt to repeat

d. **Water consumption:**

e. **Food consumption:**

f. **Describe toys favored, method, food used, etc:**

g. **Describe training today:**

Guidelines for Socialization

- If you are not comfortable handling your dog, **ASK FOR HELP**
- Keep dogs on a short leash until you are certain they can confidently and appropriately socialize with the other dogs through the grates.
- Offer your dog an enriching toy (*of appropriate size for their breed and size, large enough they cannot get it into their mouth fully to risk choking*) under supervision with an enclosed food treat.
 - Once they have demonstrated they will not destroy or choke on it, they may be left in cages **during the daytime**.
 - If your dog is barking, counter-condition by offering food treats more frequently without directly stimulating them. Just toss it into their cage.
 - Use only allergen-safe food if you are aware of a food allergy.
- If you are able, try to walk, groom, pet, and engage with your dog frequently.
 - *TIP: Walking your dog is a great study break!*
- **Go slowly** and reward them often. You are the main source of human interaction for the next few months. Engage with your dog, offer them affection. They are lonely and may be frightened by their new environment.

Remember: We are privileged to be able to play a role in socializing and stimulating these dogs to ready them for adoption to their forever homes. Proper care and socializing benefits you and them!

Grants for CENTAUR research

CENTAUR, the Center for Animal Human Relationships is an organization within the Virginia Maryland Regional College of Veterinary Medicine (VMCVM). The Organization is housed within the teaching college to provide research opportunities, education, and service/outreach to the community to increase awareness and understanding of the benefit of animal-human relationships. The academic center strives to discover the benefits of these relationships in social and emotional perspectives, as well as fundamental for mutual existence and bonds between such animals as pets and owners (Freeze, 2021). CENTAUR was founded in 2004 through a gift from the Metcalf Foundation which offers grants and gifts to those directly influencing change through the environment, learning, and other science and arts (Metcalf Foundation, 2022). However, it has been maintained through a training program and partnerships with various researchers and experts in the field. While veterinary student tuition and the initial grant can offer support to CENTAUR, giving back to the field cannot sustain the program. A vital component of maintenance can include donor contributions from alumni and graduating classes.

Additionally, shared funding through collaborative efforts offers marginal assistance for programs, such as collaborating with service-animal training programs, and local shelters providing dogs to CENTAUR and the VMCVM MDL. Additionally, incorporating graduate student research projects through CENTAUR permits mutual benefit from grants. The Animal Behavior Society offers an ABS Student Research Grant, in addition to several awards (George W. Barlow Award) which would fund a student's research while directly working with and benefitting the efforts of CENTAUR. To apply for these scholarships, students must be members of the ABS, however, a veterinary or graduate student completing research in this field typically possesses interest in animal behavior; membership would be beneficial. The grants can offer individual stipends (up to \$2,000) but the fund can be invested directly into tangible products to improve the welfare of MDL dogs or others (Animal Behavior Society, 2022). The Association for the Study of Animal Behaviour also offers various research grants, scholarships, and even workshops (ASAB, 2022). This would provide an outlet to increase awareness of the work done at CENTAUR and allow opportunity for collaboration with similar centers - means to provide joint publishable research.

Also, educational animal wellness and benefits of human-animal relationships are both vital for service dog training. While service dogs are part of the National Service Dog Non-profit, they are an essential component of the US ADA, which includes service dog grants for service animals or disabled persons eligible for service dogs. The ADA falls under the US Department of Justice Civil Rights Division. However, this establishes governmental validation of service dogs and their necessity to populations, thereby increasing likelihood for approval of governmental grants (ADA, 2022). Current sources of funding would not cease, including that which is sought directly through funding provided to VMCVM, having been established as a land-grant university built on a collaboration of two state universities, Virginia Polytechnic Institute and State University as well as University of Maryland. This includes the university funds as well as tuition delegation for various departments and research which is undertaken by university faculty and various programs, such as CENTAUR.

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Learning Objectives

Objective 1

Describe the mission and organization of a land-grant university and provide examples of teaching, research, and outreach.

Both Virginia Polytechnic Institute and State University, and the University of Maryland are land-grant universities. Land-grant universities are those which emphasize agriculture, military tactics, and mechanical arts while maintaining commitment to scientific and classical liberal studies of other higher education institutions. These institutions were governmentally accredited to receive the benefits of the Morrill Acts of 1862, 1890, and 1994 which established these regulations and federal support through provision of land and grant funds. These are reinvested in the agricultural programs and are directly related to small farmers within the state. That is, the universities seek to source and provide these small farmers as well as offer outlets for public research, enabling affordable education in practical fields to provide for the state. Teaching includes industry-specific degrees, professional and technical degrees (e.g., agricultural technology or dairy science), and affordable education to increase access to college degrees. Research includes renewable energy, medicine, and planetary exploration. Outreach includes engagement to directly enhance the economic growth of the community, and can include global cultural exploration with intention for local influence.

Objective 2

Describe the role of veterinarians in academia, and the skills, experience or training required.

Veterinarians are essential in many fields of academia. They offer a unique perspective thanks to their clinical experiences, education encompassing thousands of species, and ability to diagnose based solely on the slightest behavior changes thanks to the inability for animal patients to communicate clinical symptoms. Veterinarians are knowledgeable on many zoonoses or other diseases which may not be relevant to human medical doctors or researchers. As such, they are key components in research and promotion of public health. Most medicinal or drug research undergoes animal trials first, which also require veterinary direction. Veterinarians involved in academia must first be board certified in a particular specialty, by completing a 3-year residency. These involve teaching, practicing, researching, and learning about their specialty as well as several others. They are completed at teaching institutions (teaching hospitals, veterinary medical schools). Often a resident is matched at an institution following a rotating or specialized year-long internship after obtaining a DVM or equivalent. The ideal academic veterinarian continues to perform specialized research while

also teaching veterinary courses to DVM/VMD candidates, in addition to overseeing cases managed by residents/interns within their specialty/department. An academic clinician has undergone extensive training and is a diplomate of their related professional specialty, establishing membership in their field of practice, research, and teaching. They may instruct one or several courses or clinical courses at the institution, and partake in several boards or committees overseeing business/corporate aspects of the veterinary college or hospital, too (such as academic affairs, intern/resident matching, or judiciary committees). Lastly, in accordance with their veterinary degree, the clinician remains informed of ongoing research and applies new medicine and techniques whenever possible.

Objective 3

Develop a standard health protocol for shelter animals maintained for teaching purposes while at VTH.

This is delivered through the analysis and deliverable behavior assessment.

Objective 4

Propose and implement options to allow socialization and behavior modification of kenneled animals at the VMCVM.

This is delivered through the analysis and deliverable behavior assessment.

Objective 5

Research and compile published literature regarding shelter animal socialization, behavior modification techniques, and the importance of the human-animal bond in kenneled animals.

This is delivered through the analysis.

Objective 6

Develop course content for proposed VMCVM behavior lecture course through CENTAUR.

CENTAUR's mission is focused on the mutual social and emotional benefit of animal and human interaction. A course proposal would be a 1-credit course through both CENTAUR and the Public Corporate Department (Drs. Rist or Ragan) which would be titled: The Veterinarian's Role in Pet Behavior and Bonding. It would incorporate:

- Research-driven perspectives on veterinary medicine in a world of animal ownership, and an owner's sense of ownership of their companion.
- Exploration of captive wildlife and zoo-animal behavior and human interaction.

- Various lectures including animal behavior, socialization, adaptation to captivity, domestication, animal bonding, pet ownership, nature vs nurture, conditioning (psychology), problem behaviors in pets, interpreting animal aggression, importance of community in humans and animals, human-animal bonding, inter-pet aggression.
- Exploration on the psychological drive for animal ownership, and how humans domesticated animals; their impact on training animal behaviors.
- Implications for incorporating animal-human relationships into a career in veterinary medicine (including clinical practicing veterinarians and public/corporate veterinarians).
- Project presentations on the future of this newer field of study, including animal behavior and modification.
- Brief research proposal projects in a related field to quantify interventions to improve the human-animal relationship. Option to engage in research projects as part of master's program or public/corporate track.

Disclosure: Due to my status as a sponsored student (visiting St. George's University clinical student), I do not have access to courses for VMCVM students. Nor do I have much familiarity with the various options available for tracking or masters' programs. It is possible this is related to an existing or proposed course or is not able to be offered due to student curriculum. However, the above is an independent proposition based on a course which would intrigue me.

Public Corporate Clerkship Experience

I performed a self-directed public/corporate clerkship under the direction of Dr. Buechner-Maxwell and CENTAUR, to assess current published literature available on animal-human relationships. The purpose of this rotation was to evaluate the existing research and data in this field as well as that of kenneled animals' stress and mental well-being; and to identify gaps for new research. Most importantly, I interpreted the literature to propose improvements in standards of care, stimulation, and socialization of the teaching dogs kenneled at the VMCVM MDL for the first-year veterinary students. I also researched some funding opportunities for these improvements and developed a brief proposal for a related course which would be offered to third-year veterinary students to increase understanding and allow for further research into these domains.

I graduated in 2017 with a B.S. in Health Science from Northeastern University. As part of this program, I completed a full-time 6-month co-op internship in which I executed all aspects of a human small-scale pilot clinical research project among: a human surgeon, endocrinologist, and former veterinarian seeking a PhD in statistics. I liaised between the investigators and was directly responsible for all aspects of the project including: proposal and grant writing, regulation, enrollment, sample collection, data processing, and interpretation. While I discovered through this project, research was not the field for me, I developed immense appreciation for the scrutiny and effort involved in regulation and publication. Having re-established my career-goal, I began veterinary school at St. George's University. I have the unique opportunity to complete my clinical training at VMCVM which has afforded me a different perspective to my fourth year of veterinary training.

My background leading to veterinary school has been non-traditional and focused on human medicine and biology. But I've developed a deep interest in the relationship between animals and humans because of this. I am fascinated with the impact human socialization and environmental enrichment has on an animal's behavior and social skills. Or how much daily training and mental stimulation can improve an animal's demeanor. I am particularly interested in the comparison between these interventions as compared with breed or natural instincts.

This clerkship has allowed me to further explore this field of behavior modification with human involvement, and to assess the need for much more research and implementation of these roles in veterinary medicine. I hope CENTAUR and VMCVM will be able to benefit and seek new opportunities for research. I hope the MDL dogs will gain from their time with veterinary students, and show improved socialization, interaction, and adoption.



Daily Log: May 30 - June 17

Day 1 - Mon May 30: Compiled plan for research and analysis; 2 hours. Surface literature research; 2 hours. Begin outline of analysis, prep learning objectives; 1 hour.

Day 2 - Tue May 31: Surface literature human-animal bond research ; 2 hours. Explore human-animal bond research projects; 1 hour.

Day 3 - Wed June 1: Researched kennels and shelter husbandry standards; 2 hours. Researched animal behavior; 1 hour.

Day 4 - Thur June 2: Adoption and behavior literature research; 3 hours. Research grants and CENTAUR; 1 hour.

Day 5 - Fri June 3: Literature research of kennels, behavior, shelters; 2 hours. Explore CENTAUR and VMCMV course offerings; 2 hours.

Day 6 - Mon June 6: Rework draft of analysis; 2 hours. Grant research; 1 hour.

Day 7 - Tue June 7: Research human-animal interaction and bond; 2 hours. Literature search of human-animal bond and drafting; 2 hours.

Day 8 - Wed June 8: Update analysis and deliverables; 3 hours. Research shelter standards, quality of life, shelter SOPs; 2 hours.

Day 9 - Thur June 9: Organize literature, compile research, 2 hours. Re-evaluate learning objectives, draft final deliverables, re-assess plan for lacking objectives, 1 hour.

Day 10 - Fri June 10: Shelter and VTH kennel visits; 2 hours. Work on analysis, deliverables; 2 hours.

Day 11 - Mon June 13: Work on deliverables, final research; 4 hours.

Day 12 - Tue June 14: Final edits on deliverables, research, learning objectives, references and assessments; 5 hours.

Day 13 - Wed June 15: Submit draft of deliverables; 5 minutes.

Day 14 - Thur June 16: Submit final deliverable; 5 minutes.

Day 15 - Fri June 17: None.