

**Large Animal Candidate Boot Camp**  
**October 10-13, 2024**  
**The Ohio State University | Columbus, OH**

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DAY 1 Thursday, October 10		
Time (Eastern Time)	Topic	Presenter(s)
7:30 am	<b>Shuttle to the OSU Galbreath Equine Center</b>	
7:45-8:00 am	<b>Registration</b>	
8:00-8:10 am	<b>Welcome &amp; Introductions</b>	<i>Burns</i>
8:10-8:50 am	<b>Thoracic and Abdominal Ultrasonography</b> <ul style="list-style-type: none"> <li>Describe the principles of ultrasonography</li> <li>Identify the normal ultrasonographic anatomy of the abdomen and thorax of ruminants and horses</li> </ul>	<i>Hostnik</i>
8:50-9:30 am	<b>Ophthalmic Examination; 'Care and Feeding of an SPL'</b> <ul style="list-style-type: none"> <li>List the steps involved in a thorough large animal ophthalmic exam</li> <li>Local, regional anesthetic techniques to facilitate exam</li> <li>Placement of SPL</li> <li>Enucleation</li> </ul>	<i>Metzler</i>
9:30-9:50 am	<b>Break</b>	
9:50-10:40 am	<b>Echocardiography</b> <ul style="list-style-type: none"> <li>Understand principles of echocardiography, including appropriate equipment</li> <li>Standard echocardiographic windows</li> <li>Principles of interpretation</li> </ul>	<i>Rhinehart</i>

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<b>DAY 1</b> <b>Thursday, October 10</b>		
<b>Time</b> <b>(Eastern Time)</b>	<b>Topic</b>	<b>Presenter(s)</b>
10:40-11:30 am	<b>Diseases of the Foot/Podiatric Exam and Therapeutic Techniques</b> <ul style="list-style-type: none"> <li>• Evaluation of equine, ruminant foot</li> <li>• Principles of trimming for equine, ruminant foot</li> <li>• Digital venography</li> <li>• Therapeutic block application</li> <li>• Foot cast application</li> </ul>	<i>Lesser</i>
11:30-12:20 pm	<b>Neurologic Examination</b> <ul style="list-style-type: none"> <li>• Understand the steps involved in an equine neurologic evaluation</li> <li>• Localize neurologic lesions based on the clinical presentation</li> </ul>	<i>Hostnik</i>
12:20 – 1:00 pm	<b>Lunch</b>	

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DAY 1 (continued) Thursday, October 10		
Time (Eastern Time)	Topic	Presenter(s)
1:00-3:00 pm	<p><b>Labs – 60 minutes each rotation</b></p> <p><b>Lab 1: Ultrasonography</b></p> <ul style="list-style-type: none"> <li>Perform an advanced ultrasonographic examination of the equine thorax and abdomen.</li> <li>Identify thoracic (lung, diaphragm) and abdominal (stomach, small and large intestine, liver, spleen, and kidneys) structures.</li> </ul> <p><b>Lab 2: Echocardiography</b></p> <ul style="list-style-type: none"> <li>Obtain standard echocardiographic images of adult horse</li> <li>Identify relevant echocardiographic anatomy</li> </ul> <p><b>Lab 3: Ophthalmic Exam</b></p> <ul style="list-style-type: none"> <li>Perform an advanced ophthalmic examination</li> <li>Perform local and regional anesthetic techniques</li> <li>Place SPL</li> </ul> <p><b>Lab 4: Podiatry</b></p> <ul style="list-style-type: none"> <li>Principles of balanced trim</li> <li>Digital venography</li> <li>Foot cast application</li> </ul>	<p><i>Metzler, Hostnik Rhinehart, Lesser, Burns</i></p>
3:00-3:30 pm	<b>Break</b>	

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<b>DAY 1 (continued) Thursday, October 10</b>		
<b>Time (Eastern Time)</b>	<b>Topic</b>	<b>Presenter(s)</b>
3:30-5:30 pm	<p><b>Labs – 60 minutes each rotation</b></p> <p><b>Lab 1: Ultrasonography</b></p> <ul style="list-style-type: none"> <li>Perform an advanced ultrasonographic examination of the equine thorax and abdomen.</li> <li>Identify thoracic (lung, diaphragm) and abdominal (stomach, small and large intestine, liver, spleen, and kidneys) structures.</li> </ul> <p><b>Lab 2: Echocardiography</b></p> <ul style="list-style-type: none"> <li>Obtain standard echocardiographic images of adult horse.</li> <li>Identify relevant echocardiographic anatomy</li> </ul> <p><b>Lab 3: Ophthalmic Exam</b></p> <ul style="list-style-type: none"> <li>Perform an advanced ophthalmic examination</li> <li>Perform local and regional anesthetic techniques</li> <li>Place SPL</li> </ul> <p><b>Lab 4: Podiatry</b></p> <ul style="list-style-type: none"> <li>Principles of balanced trim</li> <li>Digital venography</li> <li>Foot cast application</li> </ul>	<i>Metzler, Hostnik Rhinehart, Lesser, Burns</i>
5:30-5:45 pm	<b>Break</b>	
5:45-6:30 pm	<b>Tour of OSU VMC</b>	<i>Burns</i>
6:30-8:30 pm	<b>Dinner – Career Paths in Large Animal Internal Medicine</b>	<i>All</i>
8:30 pm	<b>Shuttle to Hotel</b>	

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DAY 2 Friday, October 11		
Time (Eastern Time)	Topic	Presenter(s)
7:45 am	<b>Shuttle to OSU Galbreath Equine Center</b>	
8:00-8:40 am	<b>Liver – Evaluation and Biopsy</b> <ul style="list-style-type: none"> <li>• Discuss the main diagnostic approach to liver disease in the horse</li> <li>• Be able to perform an ultrasound-guided liver biopsy</li> </ul>	<i>Timko</i>
8:40-9:20 am	<b>Bone Marrow Evaluation – Indication, Technique, and Interpretation</b> <ul style="list-style-type: none"> <li>• Discuss indications for bone marrow biopsy in large animals</li> <li>• Describe bone marrow aspirate, biopsy techniques</li> <li>• Discuss sample processing, sample quality assessment</li> <li>• Describe bone marrow cytology findings in health and disease</li> </ul>	<i>Wellman</i>
9:20-10:00 am	<b>CSF Collection Techniques</b> <ul style="list-style-type: none"> <li>• Describe the C1/C2, LS, and AO CSF collection procedures and appropriate sedation protocol</li> <li>• List the advantages, disadvantages, and complications associated with each CSF collection procedure</li> </ul>	<i>Burns</i>

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DAY 2 (continued) Friday, October 11		
Time (Eastern Time)	Topic	Presenter(s)
10:00-10:20 am	<b>Break</b>	
10:20 am - 12:20 pm	<p><b>Labs – 60 minutes each rotation</b></p> <p><b>Lab 5: Liver Biopsy</b></p> <ul style="list-style-type: none"> <li>Identify landmarks for ultrasonographic imaging of the liver on the left and right sides of the abdomen.</li> <li>Perform a needle biopsy of the liver on the left and right sides of the abdomen in a standing, sedated horse.</li> </ul> <p><b>Lab 6: LS CSF Collection</b></p> <ul style="list-style-type: none"> <li>List the materials needed for LS CSF collection in the horse.</li> <li>Identify the anatomical landmarks for performing a LS CSF collection.</li> <li>Perform LS CSF collection on a standing, sedated horse.</li> </ul> <p><b>Lab 7 Bone Marrow Aspiration, Biopsy</b></p> <ul style="list-style-type: none"> <li>Collect sternal bone marrow aspirate, biopsy</li> <li>Evaluate sample quality after collection</li> <li>Process bone marrow samples for cytology, histopathology</li> </ul> <p><b>Lab 8: C1/C2 CSF Collection</b></p> <ul style="list-style-type: none"> <li>List the materials needed for C1/C2 CSF collection in the horse.</li> <li>Identify the anatomical landmarks for performing a C1/C2 CSF collection.</li> <li>Using ultrasonography, identify the site for performing a C1/C2 CSF collection.</li> <li>Perform C1/C2 CSF collection on a standing, sedated horse.</li> </ul>	<p><i>Timko, Toribio, Hostnik, Burns</i></p>

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DAY 2 (continued) Friday, October 11		
Time (Eastern Time)	Topic	Presenter(s)
12:20-1:00 pm	<b>Lunch</b>	
1:00-1:50 pm	<b>The Ruminant Abdomen</b> <ul style="list-style-type: none"> <li>Examination of abdomen in cattle and small ruminants</li> <li>Physical diagnosis of ruminant abdominal disease</li> <li>Ancillary diagnostic testing for ruminant abdominal disease</li> </ul>	<i>Lakritz</i>
1:50-2:40 pm	<b>ECG Interpretation</b> <ul style="list-style-type: none"> <li>Base-apex lead configuration</li> <li>Description of tachy- and bradyarrhythmias of large animals</li> <li>Case examples</li> </ul>	<i>Rhinehart</i>
2:40-3:30 pm	<b>Interpretation of Diagnostic Tests for Endocrine Disease</b> <ul style="list-style-type: none"> <li>List diagnostic tests for EMS and their advantages/disadvantages</li> <li>List diagnostic tests for PPID and their advantages/disadvantages</li> <li>Develop a diagnostic plan for equids suspected to have endocrine disease</li> <li>Case discussion</li> </ul>	<i>Burns</i>
3:30-3:50 pm	<b>Break</b>	

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DAY 2 (continued)  
Friday, October 11

Time (Eastern Time)	Topic	Presenter(s)
3:50-5:50 pm	<p><b>Labs – 60 minutes each rotation</b></p> <p><b>Lab 5: Liver Biopsy</b></p> <ul style="list-style-type: none"> <li>Identify landmarks for ultrasonographic imaging of the liver on the left and right sides of the abdomen.</li> <li>Perform a needle biopsy of the liver on the left and right sides of the abdomen in a standing, sedated horse.</li> </ul> <p><b>Lab 6: LS CSF Collection</b></p> <ul style="list-style-type: none"> <li>List the materials needed for LS CSF collection in the horse.</li> <li>Identify the anatomical landmarks for performing a LS CSF collection.</li> <li>Perform LS CSF collection on a standing, sedated horse.</li> </ul> <p><b>Lab 7 Bone Marrow Aspiration, Biopsy</b></p> <ul style="list-style-type: none"> <li>Collect sternal bone marrow aspirate, biopsy</li> <li>Evaluate sample quality after collection</li> <li>Process bone marrow samples for cytology, histopathology</li> </ul> <p><b>Lab 8: C1/C2 CSF Collection</b></p> <ul style="list-style-type: none"> <li>List the materials needed for C1/C2 CSF collection in the horse.</li> <li>Identify the anatomical landmarks for performing a C1/C2 CSF collection.</li> <li>Using ultrasonography, identify the site for performing a C1/C2 CSF collection.</li> <li>Perform C1/C2 CSF collection on a standing, sedated horse.</li> </ul>	<p><i>Timko, Toribio, Hostnik, Burns</i></p>
5:50-6:00 pm	<b>Break</b>	
6:00-8:00 pm	<b>Dinner – Discussion: Surviving a LAIM RTP</b>	<i>All</i>
8:00 pm	<b>Shuttle to Hotel</b>	



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DAY 3 Saturday, October 12		
Time (Eastern Time)	Topic	Presenter(s)
7:45 am	<b>Shuttle to OSU Galbreath Equine Center</b>	
8:00-8:40 am	<b>Cervical Imaging Interpretation</b> <ul style="list-style-type: none"> <li>• Discuss indications for cervical imaging in large animals</li> <li>• Discuss collection of laterolateral and oblique lateral cervical radiographs and assessment of their quality</li> <li>• Describe common radiographic abnormalities of the cervical spine in large animals</li> <li>• Case examples</li> </ul>	<i>Burns</i>
8:40-9:20 am	<b>CSF Analysis and Interpretation</b> <ul style="list-style-type: none"> <li>• Characterize the normal CSF appearance and composition</li> <li>• Identify commonly evaluated CSF parameters and their reference intervals</li> <li>• Relate CSF abnormalities with different disease processes</li> </ul>	<i>Wellman</i>
9:20-10:00 am	<b>Urinary Tract Imaging</b> <ul style="list-style-type: none"> <li>• Recognize which imaging technique is most appropriate for the presenting complaint</li> <li>• Describe the various transabdominal windows to image equine kidneys</li> <li>• List potential ultrasonographic abnormalities to support AKI and CKD</li> <li>• Recognize the endoscopic anatomy of the lower urinary tract in male and female horses</li> </ul>	<i>Hostnik</i>
10:00-10:20 am	<b>Break</b>	

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DAY 3 (continued) Saturday, October 12		
Time (Eastern Time)	Topic	Presenter(s)
10:20 am - 12:20 pm	<p><b>Labs – 60 minutes each rotation</b></p> <p><b>Lab 8: C1/C2 CSF Collection</b></p> <ul style="list-style-type: none"> <li>List the materials needed for C1/C2 CSF collection in the horse.</li> <li>Identify the anatomical landmarks for performing a C1/C2 CSF collection.</li> <li>Using ultrasonography, identify the site for performing a C1/C2 CSF collection.</li> <li>Perform C1/C2 CSF collection on a standing, sedated horse.</li> </ul> <p><b>Lab 9: ECG Interpretation</b></p> <ul style="list-style-type: none"> <li>Identify common tachy- and bradyarrhythmias of large animals</li> <li>Identify common ECG artefact</li> </ul> <p><b>Lab 10: Cystoscopy</b></p> <ul style="list-style-type: none"> <li>Know the materials needed for urethroscopy and cystoscopy in in the male horse.</li> <li>Obtain urine from the bladder of a male horse.</li> <li>Perform urethroscopy and cystoscopy in a gelding.</li> </ul> <p><b>Lab 11: Gastroscopy</b></p> <ul style="list-style-type: none"> <li>Identify normal anatomy of the equine stomach: antrum, pylorus, and proximal duodenum.</li> <li>Perform gastroscopy and duodenoscopy on a standing, sedated horse.</li> <li>Obtain gastric and/or duodenal biopsies on a standing, sedated horse.</li> </ul>	<p><i>Hostnik, Rinehart, Timko, Burns</i></p>
12:20-1:00 pm	<b>Lunch</b>	

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DAY 3 (continued) Saturday, October 12		
Time (Eastern Time)	Topic	Presenter(s)
1:00-1:40 pm	<b>EGUS and IBD – Pathophysiology and Diagnosis</b> <ul style="list-style-type: none"> <li>Using the background lecture recording and material have a good understanding of the anatomy and function of the intestinal tract.</li> <li>The session lecture will discuss potential manifestations of intestinal inflammation in the horse, their diagnosis and treatment</li> </ul>	<i>Timko</i>
1:40-2:20 pm	<b>Upper Urinary Tract Disorders – AKI and CKD</b> <ul style="list-style-type: none"> <li>List clinical complaints associated with AKI and CKD</li> <li>List common causes of AKI and CKD</li> <li>Describe the diagnostic and therapeutic approach to AKI</li> <li>Describe the diagnostic and therapeutic approach to CKD</li> </ul>	<i>Toribio</i>
2:20-3:00 pm	<b>Lower Urinary Tract Disorders</b> <ul style="list-style-type: none"> <li>List clinical complaints associated with lower urinary tract disorders in horses</li> <li>List causes of pigmenturia in horses</li> <li>Describe the diagnostic and therapeutic approach to pigmenturia</li> <li>List causes of urinary incontinence in horses</li> <li>Describe the diagnostic and therapeutic approach to urinary incontinence</li> </ul>	<i>Toribio</i>
3:00-3:30 pm	<b>Break</b>	
3:30-5:30 pm	<b>Labs – 60 minutes each rotation</b> <b>Lab 8: C1/C2 CSF Collection</b> <ul style="list-style-type: none"> <li>List the materials needed for C1/C2 CSF collection in the horse.</li> <li>Identify the anatomical landmarks for performing a C1/C2 CSF collection.</li> <li>Using ultrasonography, identify the site for performing a C1/C2 CSF collection.</li> <li>Perform C1/C2 CSF collection on a standing, sedated horse.</li> </ul> <b>Lab 9: ECG Interpretation</b>	<i>Hostnik, Rhinehart, Timko, Burns</i>

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DAY 3 (continued) Saturday, October 12		
Time (Eastern Time)	Topic	Presenter(s)
	<ul style="list-style-type: none"> <li>Identify common tachy- and bradyarrhythmias of large animals</li> <li>Identify common ECG artefact</li> </ul> <p><b>Lab 10: Cystoscopy</b></p> <ul style="list-style-type: none"> <li>Know the materials needed for urethroscopy and cystoscopy in in the male horse.</li> <li>Obtain urine from the bladder of a male horse.</li> <li>Perform urethroscopy and cystoscopy in a gelding.</li> </ul> <p><b>Lab 11: Gastroscopy</b></p> <ul style="list-style-type: none"> <li>Identify normal anatomy of the equine stomach: antrum, pylorus, and proximal duodenum.</li> <li>Perform gastroscopy and duodenoscopy on a standing, sedated horse.</li> <li>Obtain gastric and/or duodenal biopsies on a standing, sedated horse.</li> </ul>	
5:30-6:00 pm	<b>Break</b>	
6:00-11:00 pm	<b>Shuttle to Ohio State Fairgrounds – All-American Quarter Horse Congress (dinner on own at the Congress)</b>	

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DAY 4 Sunday, October 13		
Time (Eastern Time)	Topic	Presenter(s)
7:45 am	<b>Shuttle to OSU Galbreath Equine Center</b>	
8:00-8:30 am	<b>Myelography</b> <ul style="list-style-type: none"> <li>Using the background lecture recording and material have a good understanding of how to perform plain radiographic and CT cervical myelography in the horse, and anatomy of the vertebral canal</li> <li>The session lecture will discuss when myelography is appropriate, potential complications, interpretation of images and their relation to spinal compression and intervertebral nerve compression</li> </ul>	<i>Burns</i>
8:30-9:00 am	<b>Disorders of Energy Metabolism in Large Animals</b> <ul style="list-style-type: none"> <li>Discussion of the pathophysiology, diagnosis, and treatment of: <ul style="list-style-type: none"> <li>- Pregnancy toxemia</li> <li>- Bovine ketosis</li> <li>- Hyperosmolar syndrome and insulin resistance of camelids</li> </ul> </li> </ul>	<i>Lakritz</i>
9:00-9:20 am	<b>Break</b>	
9:20-11:50 am	<b>Labs – All Attendees Participate</b> <b>Lab 12: Miscellaneous Procedures</b> <ul style="list-style-type: none"> <li>Perform AO CSF Collection/Myelogram Demonstration, IV Anesthesia, Intrathecal Lidocaine Euthanasia, Post-Mortem Renal Biopsy, Tracheotomy, Thoracotomy, Enucleation, etc.</li> </ul>	<i>Burns, Toribio, Hostnik, Timko, Lakritz</i>
11:50-12:10	<b>Break</b>	
12:10-1:10 pm	<b>Lunch and Course Wrap Up</b>	