

SPLH 764 NEURAL BASES SPEECH & VOICE

Dr. Steven M. Barlow
Professor

Weekly Topic & Readings Schedule

Fall 2011

SPLH 764/464 #17503/#18546 11:20-1:00 PM TR 3048 DOLE October 18-December 8

DATE	Topic Content	*.PPT *.pdf	Neuroanatomy Atlas (2008) Haines	Clinical Neuroscience (2008) Young, Young, Tolbert
Oct 18	<i>Course overview, Introduction to nervous system organization, functional units</i>	SPLH764lec1	Pp 1-8	PART I
Oct 20	<i>Spinal cord topography and functional levels</i>	SPLH764lec2	Pp 10-12	PART I
Oct 25	<i>Brainstem Anatomy & Functional Levels</i>	SPLH764lec3	Pp 24-27, 30-35, 100-139, 177, 214-221	PARTS I & VI
Oct 27	<i>Brainstem CPGs for speech, voice, respiration, swallowing</i>	Barlow, Lund, Estep, & Kolta. (2010). Central pattern generators for speech and orofacial activity. In S.M. Brudzynski (Ed.), <u>Handbook of Mammalian Vocalization</u> . Elsevier, Oxford., pp. 351-370.		
Nov 01	<i>Forebrain - topography and functional levels</i>	SPLH764lec4	Pp 30-31, 77-79, 144-145, 166, 168, 171	PART I
Nov 03	<i>Brainstem motor centers: decerebrate and decorticate posturing</i>	SPLH764lec7 <i>L. Venkatesan</i>	Pp 134-137, 206-211	PARTS I & VI

Nov 08	<i>Lower motor neurons: flaccid paralysis</i>	SPLH764lec5	Pp 214-221	PART II (pp 47-64)
Nov 10	<i>Pyramidal & Corticobulbar Systems: spastic paralysis</i>	SPLH764lec6	Pp 198-205	PART II (pp 65-78)
Nov 15	NO CLASS – Society for Neuroscience, Washington DC	study 'BRAIN FACTS' *.pdf		
Nov 17	NO CLASS - ASHA National Convention, San Diego, CA <i>Read Basal Ganglia: anatomy</i>	SPLH764lec8	Pp 163-169, 234-241	PART II (pp 87-102)
Nov 22	<i>Basal Ganglia: movement disorders, pathophysiology, STN & PVP PD, Speech & Voice disorders</i>	SPLH764lec8 DBS.ppt Hammer, Barlow, Lyons, Pahwa. (2011). STN DBS changes speech respiratory and laryngeal control in PD. <i>J Neurology</i> , 257(10):1692-1702. Hammer, Barlow, Pahwa, Lyons. (2010). STN DBS Changes VP Control in PD. <i>J Comm Dis</i> , 44(1): 37-48. Barlow, Hammer. (2009). Pallidotomy and DBS in PD: effects on speech and voice. <u>Clinical Management of Sensorimotor Speech Disorders</u> (M. McNeil, ed.). Thieme Medical Publishers, 362-364.	Pp 144-153, 200-205	PART II (pp 87-102)
Nov 24	THANKSGIVING HOLIDAY			
Nov 29	<i>Cerebellum: Anatomy, Ataxia, pathophysiology, ataxia dysarthria</i>	SPLH764lec9	Pp 36-37, 222-233	PART II (pp 103-120)
Dec 01	<i>Cerebral cortex: organization, premotor inputs, subcortical inputs physiology, apraxia, aphasia, Upper Motor Neuron Syndrome (UMN)</i>	SPLH764lec10	Pp 13-23, 176-179, 13-21	PART IV

<p>Dec 06</p>	<p><i>Somatosensory Anatomy & Physiology</i></p> <p><i>TAC-Cell Somatosensory neuroimaging</i></p>	<p>SPLH764lec11 <i>L. Venkatesan</i></p> <p>Venkatesan, Barlow, Popescu M, Popescu A, Auer. (2010). TAC-Cell inputs to human hand and lip induces short-term adaptation of the primary somatosensory cortex. <i>Brain Res</i>, 1348, 63-70.</p> <p>Popescu, Barlow, Estep, Popescu E-A, Venkatesan, Auer, Brooks. (2010). Cutaneous stimulation of the digits and lips evokes responses with different adaptation patterns in primary somatosensory cortex, <i>NeuroImage</i>, 52: 1477–1486.</p> <p>Popescu E-A, Barlow, Venkatesan, Wang, Popescu M. (2011). Adaptive changes in the neuromagnetic response of the primary and association somatosensory areas following repetitive tactile hand stimulation in humans. <i>Human Brain Mapping</i> (in press).</p>	<p>Pp 178-189, 190-195</p>	<p>PART III (pp 129-174)</p>
<p>Dec 08</p>	<p><i>Vocalization & Laryngeal somatosensory</i></p> <p><i>Hyperactive ASD – somatosensory physiology</i></p>	<p>SPLH764lec12</p> <p>Hammer, Barlow. (2010). Laryngeal somatosensory deficits in PD: Implications for speech respiratory and phonatory control. <i>Exp Brain Res</i>, 201(3):401-409.</p>	<p>Pp 128-135</p>	

Required Texts:

1. Young, P.A., Young, P.H., & Tolbert, D.L. (2008). **Basic Clinical Neuroscience**. 2nd Edition. Wolters Kluwer | Lippincott Williams & Wilkins, Baltimore, MD. ISBN 9780781753197
2. Haines, D.E. (2008). **Neuroanatomy. An Atlas of Structures, Sections, and Systems**. 7th Edition. Wolters Kluwer | Lippincott Williams & Wilkins, Baltimore, MD. ISBN 9780781763288

Course Objective: To gain a basic understanding of the organization (neuroanatomy) and function (neurophysiology) of the central and peripheral nervous system in relation to motor control, somatosensory physiology, vocalization, central pattern generation, speech, and language production. Special consideration is directed towards the neurology of speech and language; classification of impairments (sensory, motor, integrative functions) according to the site of lesion(s).

Course Format: The course will include formal lecture, demonstration, some limited gross anatomical inspection and identification of human brain material. Learning materials will be made available on the WWW.

Assessment Schedule: Six objective-format quizzes will be posted to the SPLH764 BlackBoard – Bb (<http://courseware.ku.edu/>) courseware site over the next 8 weeks. These assessments will be announced in class and are timed on Bb (30 minutes on a single attempt). Each quiz will consist of 6 questions. Each question is worth 2 points. Therefore completion of the 36 quiz questions during the 8-week course will yield a maximum possible score of 72 points. A succinct written essay or review of a neurologically-based communication disorder or topic of vocal tract neurophysiology, not to exceed 1500 words (**MS Word *.doc** format, 12-pt font, double space, w/references in APA style), is due **December 15th** @ NOON as an e-file attachment sent directly to the instructor (sbarlow@ku.edu). Feel free to include tables/pictures to convey your message. **This paper can be used in your graduate portfolios.** Your final grade is based on the quiz scores, and final essay (TOTAL = 172 points).

"The staff of Services for Students with Disabilities (SSD), 135 Strong, 785-864-2620 (v/tty), coordinates accommodations and services for KU courses. If you have a disability for which you may request accommodation in KU classes and have not contacted them, please do as soon as possible. Please also see me privately in regard to this course."

Health: KU Pandemic Response Plan (<http://www.pandemic.ku.edu/>) and the "Personal Guide to Protect Against Flu" (<http://www.pandemic.ku.edu/pdf/tipSheet.pdf>)

Dr. Steven M. Barlow, Professor SPLH, Neuroscience, Bioengineering, Human Biology

Email sbarlow@ku.edu
Work Phone(s) 749-1004
Office Location Rm 120 Wakarusa Research Facility (1315 Wakarusa Drive, Lawrence KS 66049)
Office Hours By appointment, ***email easiest to setup meeting***
Notes Director, Communication Neuroscience Laboratories

Lalit Venkatesan Lalit@ku.edu

Office Location Rm 105 Wakarusa Research Facility (1315 Wakarusa Drive, Lawrence KS 66049)