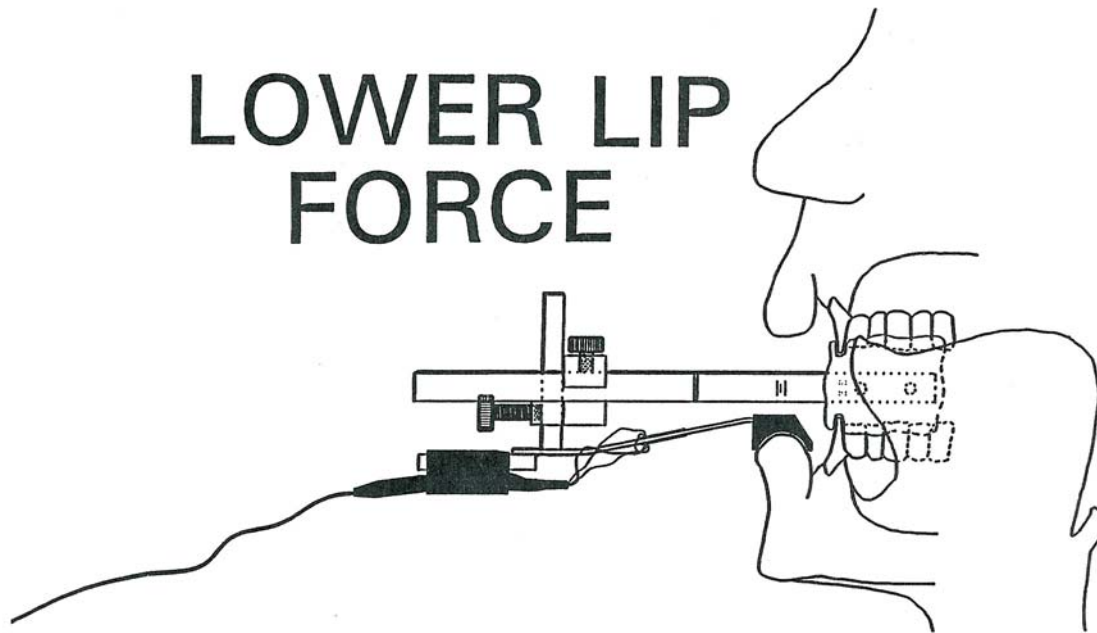


**UNIVERSITY of KANSAS – SPEECH-LANGUAGE-HEARING: SCIENCES
and DISORDERS**

LOWER LIP FORCE



SPLH 764/464 INSTRUMENTATION

Line# 65929 UG

Line # 64050 GRAD

Spring 2007 HAWORTH 4106 – 8:00AM – 9:25AM Mon (2 cr)

Instructor:

Dr. Steven M. Barlow – Professor, SPLH

sambarlow@ku.edu

Programs in Neuroscience and Human Biology

Director, Communication Neuroscience Laboratories

TL: 785-864-4447 (4157 Haworth Hall)

Lab: 785-864-1196 (4106 Haworth Hall)

FX: 785-864-4403 (4106 Haworth Hall)

Office Hours: open by appointment/email

Readings. Available as *.pdf, WWW links, or photocopy

Course Objective: To develop a working knowledge of physiological instruments and measurement systems used in speech physiology research and clinic.

Course Tools: Materials and resources provided by the Communication Neuroscience Laboratories (Haworth 4106)

Course Format: The course will include instructor presentations of specific topics related to function and use of laboratory instrumentation for speech physiology research and clinical application. Sample experiments and recordings will be developed through student and instructor collaboration.

Assessment: Students are expected to attend each laboratory class and actively participate in discussions. Students are expected to participate in lab practical exercises until mastery of each topic is achieved. Objective quizzes will be posted to **BlackBoard** approximately every two weeks (timed format).

Students with Disabilities

"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 one of the instructors privately in regard to this course."

SPLH 764 INSTRUMENTATION in SPEECH PHYSIOLOGY –Spring 2007

Line# 65929 UG, Line # 64050 GRAD HAWORTH 4106 –
8:00AM – 9:25AM Mondays

DATE	Topic Content	*.PPT files	Readings
Jan 22	Introduction, logistics & overview, biosignal types, signal operating range, minimum sampling requirements, Nyquist		

	theorem		
Jan 29	Signal Conditioning types, Signal Flowchart, Channel assignments & Data Acquisition		
Feb 05	Oscilloscope, basics		https://www.cs.tcd.ie/courses/baict/bac/jf/labs/scope/ http://www.williamson-labs.com/scope-top.htm https://www.cs.tcd.ie/courses/baict/bac/jf/labs/scope/oscilloscope.html
Feb 12	Oscilloscope, measurement		http://www.umd.umich.edu/casl/natsci/slc/slconline/OSCIL/index.htm
Feb 19	Calibration: Force, displacement, pressure, flow		
Feb 26	Calibration: EMG		
Mar 05	Calibration: Velocity, Coulbourn Differentiators		
Mar 12	The Instrumentation 'Rack' MAC patch panel, I/O, BNC cables, configuring for an experiment		
Spring Break Mar 20	BREAK	BREAK	BREAK
Mar 26	Somatosensory EPs: Median Nerve recordings, calculation of conduction velocity		
Apr 02	Somatosensory EPs: Median Nerve recordings, calculation of conduction velocity		
Apr 09	Speech Production: Movement, EMG,		Barlow, S.M., Cole, K.J., & Abbs, J.H. (1983). A new headmounted lip-

	acoustics using ADInstruments PowerLAB		<p>jaw movement transduction system for the study of motor speech disorders. <i>Journal of Speech and Hearing Research</i>, 26 (2), 283-288.</p> <p>Barlow, S.M., Finan, D.S. Andreatta, R.D. & Boliek, C (2007). Kinematic measurement of the human vocal tract. Invited chapter in <u>The Clinical Management of Sensorimotor Speech Disorders</u> (M. McNeil, ed.). <i>in press</i>. Thieme Medical Publishers. 127 pages.</p>
Apr 16	Speech Production: Movement, EMG, acoustics using ADInstruments PowerLAB		

Apr 23	AEROWIN RT		<p>Barlow, S.M., Suing, G., & Andreatta, R.D. (1999). Speech aerodynamics using AEROWIN. Chapter 3 in <i>Handbook of Clinical Speech Physiology</i>. Singular Publishing Group, Inc. San Diego, California. 165-190.</p> <p>Paseman, L.A., Barlow, S.M., & Forrest, K. (1999). Pressure regulated measures of laryngeal resistance in normal and dysarthric speakers. Chapter 4 in <i>Handbook of Clinical Speech Physiology</i>. Singular Publishing Group, Inc. San Diego, California. 191-218.</p> <p>Barlow, S.M., Paseman, L.A. & Philippbar, S. (1999). The aerodynamics of laryngeal engagement in neurogenic voice disorders. Chapter 5 in <i>Handbook of Clinical Speech Physiology</i>. Singular Publishing Group, Inc. San Diego, California. 219-246.</p> <p>AEROWIN_RT manual.pdf</p>
Apr 30	FORCEWIN RT		Barlow, S.M., & Abbs, J.H. (1983). Force

			<p>transducers for the evaluation of labial, lingual and mandibular function in dysarthria. <i>Journal of Speech and Hearing Research</i>, 26, 616-621.</p> <p>Barlow, S.M., Bradford, P.T., & Andreatta, R.D. (1999). Orofacial Force Physiology. Chapter 8 in <i>Handbook of Clinical Speech Physiology</i>. Singular Publishing Group, Inc. San Diego, California. 303-346.</p> <p>Barlow, S.M., & Andreatta, R.D. (1999). Muscle systems of the vocal tract. Chapter 1 in <i>Handbook of Clinical Speech Physiology</i>. Singular Publishing Group, Inc. San Diego, California. 1-100.</p> <p>Barlow, S.M., & Abbs, J.H. (1986). Fine force and position control of select orofacial structures in the Upper Motor Neuron Syndrome. <i>Experimental Neurology</i>, 94, 699-713.</p> <p>FORCEWIN_RT manual.pdf</p>
<p>May 07</p>	<p>OROSTIFF</p>		<p>OROSTIFF manual.pdf</p> <p>Seibel L, Barlow SM. (2006). Automatic measurement of non-participatory stiffness in the perioral complex. Submitted to <i>J Speech-Lang-Hearing Research</i>.</p> <p>Barlow, S.M., & Muller, E.M. (1991). The relation between interangle span and in vivo resultant force in the perioral musculature. <i>Journal of Speech and Hearing Research</i> 34: 252-259.</p>