



Graduate Study in Architectural Acoustics within the Durham School at the University of Nebraska – Lincoln



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Durham School of Architectural Engineering and Construction, University of Nebraska-Lincoln

ABOUT THE PROGRAM

- Architectural Engineering Program started in 1998
- Housed at the Peter Kiewit Institute in Omaha, Nebraska
- One of three programs in the UNL Durham School of Architectural Engineering and Construction (\$30M endowment)
- Eleven tenure/tenure-track faculty (two in acoustics) and eight affiliated faculty
- 250+ students and growing
- Degrees offered:
 - ❖ Accredited 5 year (4+1) program – Bachelor's/Master's of Architectural Engineering (MAE)
 - ❖ Master's of Science (M.S.)
 - ❖ Doctor of Philosophy (Ph.D.)



GRADUATE COURSES IN ACOUSTICS

AE 8300 – Advanced Noise Control

Texts: Bies and Hansen; Wilson; ASHRAE Applications Handbook
Acoustic sources, sound power, HVAC noise control, vibration control, enclosures, barriers, mufflers, active noise control, outdoor sound propagation

AE 8330 – Advanced Architectural Acoustics

Texts: Long; Kuttruff
Wave/modal acoustics, statistical/geometrical acoustics, subjective qualities + objective measures, modeling of room acoustics, design of spaces

AE 8350 – Electroacoustics

Texts: Beranek; Eargle and Foreman
Circuit analogies, transducer types, equipment, directivity, calibration, sound reinforcement system design, speech intelligibility

AE 9300 – Current Topics in Architectural Acoustics

Texts: Recent peer-reviewed journal articles
Students lead topic presentation, study guides, and discussion

AE 8940 – Assorted Special Topics Classes

Acoustic Measurement and Signal Processing; Absorption and Reflection; Computer Modeling and Auralization; ASA Student Design Competition

Other UNL graduate acoustic courses: Engineering Acoustics, Vibration Theory and Applications, Hearing Science, Psychoacoustics, Auditory Signal Processing, Speech Perception and Processing, +



FACULTY RESEARCH INTERESTS

Lily M. Wang, PhD, PE, FASA, INCE Bd. Cert. (faculty member since 2000)



- ❖ Effects of noise and reverberation on human perception and performance
 - Speech comprehension and student achievement in learning environments
 - Thresholds of annoyance from tones in noise
- ❖ Linking room acoustic subjective perception and objective metrics
 - Just Noticeable Difference (JND) of reverberation time
 - Perception of reflection density
- ❖ Computer modeling and prediction of room acoustics
 - Impact of time-varying source directivity
- ❖ Uncertainty in room acoustic measurements

Erica E. Ryherd, PhD, LEED AP (faculty member since 2014)

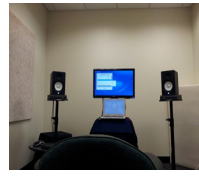
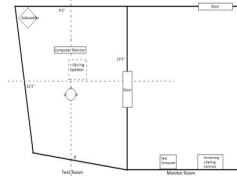


- ❖ Hospital acoustics
 - Improving acoustic measurement and characterization techniques
 - Linking sounds to the psychological and physiological responses of occupants
 - Identifying and evaluating acoustical treatments and noise mitigation strategies
- ❖ Environmental noise
- ❖ Sustainable buildings
- ❖ Acoustic venues

FACILITIES AND EQUIPMENT

Nebraska Test Chamber

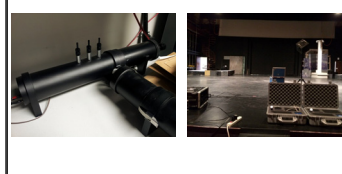
- Acoustically isolated test chamber and control room replicates office environment



Sound Booth



Assorted Equipment



ACTIVITIES

Nebraska Acoustics Group (NAG)

- Approximately 12-15 members, undergraduate and graduate students
- One hour meeting every two to three weeks (+ social events!)
- Share acoustic news and research
- One member presents on ongoing research at each meeting
- <http://nebraskaacousticsgroup.org/>

University of Nebraska Student Chapter of the ASA (UNASA)

- First ASA student chapter in the world
- Events include:
 - Guest lecturers
 - Acoustics outreach at local high schools
 - Tours of performing arts and acoustics related facilities
 - Local venue measurement team
 - <http://engineering.unl.edu/student-organization-unasa>



CURRENT STUDENTS

Zhao (Ellen) Peng (PhD 2014)	Effects of room acoustics and foreign accent on speech comprehension by native and non-native English-speaking listeners
Hyun Hong (PhD 2015)	Subjective perception of varying reflection densities in room impulse responses
Joonhee Lee (PhD 2015)	The effects of tones in noise on human annoyance and performance
Matthew Blevins (PhD 2016)	Design and optimization of membrane-type acoustic metamaterials using genetic algorithms
Sungbeen Cho (PhD 2017)	Architectural Acoustics
Jennifer Francis (MS 2014)	Determining thresholds of annoyance to tones in noise
Devin Wong (MS 2015)	Relationship between acoustics and student achievement in high performance 'green' buildings
Madeline Davidson (MS 2016)	Architectural Acoustics



WE'RE PROUD OF OUR ALUMNI!

Erica Bowden Ryherd (PhD 2006)	Assistant Professor in the Durham School of Architectural Engineering and Construction, University of Nebraska – Lincoln
David T. Bradley (PhD 2006)	Associate Professor in Physics and Astronomy, Vassar College, Poughkeepsie, NY
Jonathan Rathsam (PhD 2008)	NASA Langley Research Center, Hampton, VA
Michelle Vigeant (PhD 2008)	Assistant Professor in Acoustics and Architectural Engineering, Penn State University, State College, PA
Lauren Ronnsse (PhD 2011)	Assistant Professor in Audio Arts and Acoustics, Columbia College, Chicago, IL
Carl Hart (PhD 2014)	Postdoc with US Army Corps of Engineers Research Lab, Hanover, NH
Alicia Wagner Larsen (MS 2008)	Acentech, Cambridge, MA
Norman Philipp (MS 2009)	Assistant Professor in the School of Construction at Pittsburg State University, Pittsburg, KS
Christopher Ainley (MS 2012)	Wrightson, Johnson, Haddon and Williams, Inc., Dallas, TX
Caleb Sieck (MS 2013)	PhD student in Electrical Engineering at University of Texas at Austin
Andrew Hathaway (MS 2013)	Acoustical Design Collaborative, Baltimore, MD
Marc Choiniere (MAE 2008)	RPG Diffusor Systems, Inc., Denver, CO
David Manley (MAE 2008)	D. L. Adams Associates, Denver, CO
James Cottrell (MAE 2012)	Sextant Group, Pittsburgh, PA
Eric Powell (MAE 2012)	Paradise Theater, IL
Adam Buck (MAE 2013)	HDR Engineering, Inc., Minneapolis, MN
Josh Thede (MAE 2014)	SSA Acoustics, Seattle, WA