CORY GLOECKNER cgloeckner@jcu.edu

CURRICULUM VITAE

EDUCATION

University of Minnesota, Minneapolis, Minnesota
Ph.D. Biomedical Engineering, 2011 to 2017
Neuroengineering minor

University of Pretoria, Pretoria, South Africa
Ph.D. Theology, 2017 to 2021

Saint Leo University, Saint Leo, Florida
M.A. Theology, 2015 to 2016

University of Cincinnati, Cincinnati, Ohio
B.S. Chemical Engineering, 2006 to 2011
Mathematics minor

TEACHING EXPERIENCE

John Carroll University, Physics Department, Cleveland, OH
Assistant Professor, August 2022 to present

- Courses taught: Introduction to Engineering EP101, Engineering Physics Projects EP102, Engineering Physics Applications EP235, Computation in Physics and Engineering EP251, Senior Engineering Design I & II EP407 & EP408, General Physics Lab I & II PH125L & PH126L, Physics Lab 1 & II (majors) PH135L & PH136L, and more in the future!
- As an engineering expert in the department, I will help modify the curriculum of the Engineering Physics program.
- The department is seeking ABET accreditation for the Engineering Physics program, and I will be contributing to that effort.

University of Minnesota Duluth, Mechanical &Industrial Engineering Department, Duluth, MN
Assistant Professor, August 2019 to May 2022

- Courses taught: Controls & Kinematics Lab ME3222, Materials Science & Engineering ME2105, Heat Transfer, Thermodynamics, and Fluid Mechanics Laboratory ME4122.
- Based on graduate electrophysiology and signals background and undergraduate materials and CHE background, my course load was focused in signal processing and controls, materials science, and thermodynamics/heat transfer/fluid mechanics.
- Received outstanding student evaluations (5.5/6 or higher) for every class taught (dept. best).
- Received an overall performance review score of “4”, the highest possible score, in every year as a faculty member.
- Received the SCSE college-wide Teaching Award in 2021, my first year at a 100% appointment.

University of Minnesota (Twin Cities), Biomedical Engineering Department, Minneapolis, MN
Instructor, Spring 2018, Spring 2019

- Courses taught: BMEN5413 (Neural Interfacing), which is a graduate/senior undergraduate course in BME.
- Revamped the course, adding new content and updating older content; redid course structure and created new homework assignments/quizzes.
- Received 5.5/6 or higher on all major instructor-related categories on student evaluations.

Teaching Assistant, Spring 2015, Spring 2016, Fall 2016, Spring 2017

- For all four appointments: graded homework and tests, judged projects, held office hours, tutored students individually on homework and test preparation, and gave occasional guest lectures.
- For Spring 2017: developed new homework assignments, taught 5 lectures, and generated new course material.

West Clermont Local School District, Cincinnati, OH

Choir teacher and Co-director of choirs, September 2008 to May 2011

- Taught choir and instrumental pit as an elective class, coached students individually on ear training, developed and directed the first combined full symphony and choir ensemble in district history, and was responsible for the personal development of high-school students.

RESEARCH EXPERIENCE

John Carroll University

PI, August 2022 to present

- I will be starting a neural engineering research lab in the Physics department which will include student research opportunities.
- Projects: Brain-Computer Interface (BCI) using electroencephalography (EEG), treatments for neural sensory disorders, evidence-based theological methods.

University of Minnesota Duluth/TC

Co-PI, January 2020 to December 2021

- Secondary advisor to an ultrasound neurophysiology study at Twin Cities campus (as a UMD faculty member).

University of Minnesota

Post-doc, July 2017 to May 2019

- Overseeing research investigating the effects of ultrasound stimulation on rheumatoid arthritis in rodents.

Research Assistant/Graduate Student, August 2011 to June 2017.

- Main Project 1: Investigating multi-modal integration of sensory pathways and plasticity in all five primary sensory cortices and inferior colliculus in electrophysiology experiments for neuromodulation sensory disorder treatment.
- Main Project 2: Investigating the effects of stress on behavior and the effectiveness of treatments for neural disorders.

Medtronic, Inc.

Graduate Intern, Sensor Technology, May 2013 to August 2013

- Project details are confidential.

University of Cincinnati

Research Assistant, June 2009 to August 2011

- Main project: Investigating the feasibility of using silica membranes for protein separation in hemodialysis.

Environmental Protection Agency

Engineering Research Assistant, June 2010 to September 2010

- Main project: Correcting high levels of undesirable solubles in a water treatment facility.

HONORS AND AWARDS

- Invited speaker to International Neuromodulation Society Interim Meeting in Mumbai, India, November 2022.
- University of Minnesota Duluth SCSE college-wide Teaching Award 2021 (annual award for the top teacher in the college.
- Received five Thank-a-Teacher certificates in one year (2021).
- Highlight Talk Competition Winner (twice), *Minnesota Neuromodulation Symposium*, April 2016 and 2017.
- NSF IGERT Fellowship recipient, December 2012 – December 2014
- Interdisciplinary Doctoral Fellowship recipient, September 2015 – September 2016.
- 3rd Place, *Minnesota Neuromodulation Symposium* poster competition, April 2013.
- Clarence I. Rossiter Academic Scholarship recipient.

PUBLICATIONS

- **Gloeckner C**, Smith B, Markovitz C, Lim H. "A new concept for noninvasive tinnitus treatment utilizing multimodal pathways." *IEEE EMBC* 2013.
- **Gloeckner C**, Smith B, Markovitz C, Lim H. "Synchronized body and acoustic stimulation induces auditory plasticity: implications for a noninvasive tinnitus treatment." *IEEE EMBS* 2013.
- **Gloeckner C**, Nocon J, Lim H. "Topographic and widespread auditory modulation of the somatosensory cortex: potential for bimodal sound and body stimulation for pain treatment." *Journal of Neural Engineering* 2022.
- Zitella L, Mohsenian K, Pahwa M, **Gloeckner C**, Johnson M. "Computational modeling of pedunculopontine nucleus deep brain stimulation." *Journal of Neural Engineering*, 2013.
- Markovitz C, Smith B, **Gloeckner C**, Lim H. "Investigating a new neuromodulation treatment for brain disorders using synchronized activation of multimodal pathways." *Nature Scientific Reports*, 2015
- Guo H, Hamilton M, Offutt S, **Gloeckner C**, Li T, Kim Y, Legon W, Alford J, Lim H. "Ultrasound Produces Extensive Brain Activation via Cochlear Pathway." *Neuron* 2018.
- Guo H, Offutt S, Hamilton M, Kim Y, **Gloeckner C**, Zachs D, Alford J, Lim H. "Can ultrasound activate or only inhibit *in vivo* mammalian nerves?" Accepted in *Nature Scientific Reports* 2021.
- **Gloeckner C**, Nocon J, Lim H. "The effects of stress on neuromodulation and plasticity induction." In preparation, to be submitted to *Neuron* in 2023.
- **Gloeckner C**, Hughes R, Lim H. "Effects of somatosensory stimulation location and timing on multisensory neuromodulation plasticity outcomes." In preparation.
- **Gloeckner C**, Lim H. "Inducing plasticity in all five major sensory cortices using multisensory neuromodulation." In preparation.
- **Gloeckner C**, Beyers J. "An investigation of Baha'i views on religious diversity." In preparation, to be submitted in 2023.
- Basile J, Hamilton M, **Gloeckner C**. "Differing spike pattern responses to receptor activation in sensory cortices." In preparation.

TALKS

- **Gloeckner C**, Lim H. "Bimodal auditory and somatosensory stimulation: implications for pain treatment." Invited Speaker. *International Neuromodulation Society Interim Meeting*, Mumbai, India, November 2022.
- **Gloeckner C**, Nocon J, Lim H. "Controlling plasticity in sensory cortical regions using multisensory neuromodulation." Oral Presentation. *Minnesota Neuromodulation Symposium*, Minneapolis, MN, April 2016.

- **Gloeckner C**, Nocon J, Lim H. "Controlling modulation and plasticity in sensory cortices through multisensory neuromodulation." Oral Presentation *BMES 2016 Annual Meeting*, Minneapolis, MN, October 2016.
- **Gloeckner C**, Nocon J, Lim H. "The effects of stress on plasticity and neuromodulation outcomes." Oral Presentation. *Minnesota Neuromodulation Symposium*, Minneapolis, MN, April 2017.

POSTER PRESENTATIONS

- **Gloeckner C**, Tilleson J, Kastl D, Smith B, Lim H. "Discovery of Somatotopy within the Inferior Colliculus: Implications for a New Tinnitus Treatment." *Association for Research in Otolaryngology Midwinter Meeting*, Baltimore, MD, February 2013, *Minnesota Neuromodulation Symposium*, Minneapolis, MN, April 2013. *IGERT National Poster and Video Competition*, Online, May 2013.
- **Gloeckner C***, Smith B*, Markovitz C, Parker L, Lim H. "Co-Activation of the Somatosensory and Auditory Pathways to Induce Central Auditory Plasticity: A New Tinnitus Treatment." *Institute for Engineering in Medicine Conference and Retreat*, Minneapolis, MN, September 2013.
- **Gloeckner C**, Tilleson J, Kastl D, Smith B, Lim H. "Characterization of Somatosensory Inputs Into the Auditory Midbrain: Somatotopy and Latencies." *Neuroscience 2013,* San Diego, CA, November 2013.
- **Gloeckner C**, Smith B, Markovitz C, Lim H. "Synchronized Body and Acoustic Stimulation Induces Auditory Plasticity: Implications for a New Tinnitus Treatment." *IEEE EMBS Conference on Neural Engineering*, San Diego, CA, November 2013. *Minnesota Neuromodulation Symposium,* Minneapolis, MN, April 2014.
- **Gloeckner C**, Markovitz C, Smith B, Lim H. "Multimodal Stimulation Therapy: Developing a Noninvasive Approach for Treating Tinnitus." *International Tinnitus Seminar*, Berlin, Germany, May 2014. *Institute for Engineering in Medicine Conference*, Minneapolis, MN, September 2014.
- **Gloeckner C**, Mesfin Y, Markovitz C, Smith B, Lim H. "A Noninvasive Treatment for Tinnitus: From Animal Studies to Clinical Trials." *ITN Conference and Retreat*, Minneapolis, MN, February 2015.
- **Gloeckner C**, Markovitz C, Smith B, Lim H. "Multimodal Synchronization Therapy (mSync): Developing a Noninvasive Approach for Treating Tinnitus." *Minnesota Neuromodulation Symposium*, Minneapolis, MN, April 2015.
- **Gloeckner C**, Markovitz C, Offutt O, Smith B, Lim H. "Multimodal Synchronization Therapy (mSync): Exploring the Effects of Pinna Stimulation." *Tinnitus Research Initiative*, Ann Arbor, MI, June 2015.
- **Gloeckner C**, Nocon J, Lim H. "Controlling Plasticity in Sensory Cortical Regions Using Multisensory Neuromodulation." *Minnesota Neuromodulation Symposium,* Minneapolis, MN, April 2016.
- **Gloeckner C**, Nocon J, Lim H. "Multisensory Neuromodulation: Activating Peripheral Nerves to Induce Brain Plasticity." *Neural Interfaces Conference*, Baltimore, MD, June 2016. *Institute for Engineering in Medicine Conference,* Minneapolis, MN, September 2016.
- **Gloeckner C**, Nocon J, Lim H. "Controlling Plasticity in Sensory Cortical Regions Using Multisensory Neuromodulation." *Neuroscience 2016*, San Diego, CA, November 2016.
- **Gloeckner C**, Nocon J, Lim H. "The Effects of Stress on Plasticity and Neuromodulation Outcomes." *Minnesota Neuromodulation Symposium*, Minneapolis, MN, April 2017.