

B. AUDREY NGUYEN, PHD

Assistant Professor of Practice Biomedical Engineering
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EDUCATION

The Ohio State University

Ph.D. Biomedical Engineering Aug 2019

Advisor: Cynthia J. Roberts, Ph.D.

Co-advisor: Matthew A. Reilly, Ph.D.

Thesis: "The Role of the Sclera and Orbital Tissues on the Biomechanical Deformation Response of the Cornea and Whole Eye Under Loading by Dynamic Scheimpflug Analyzer"

Master of Science, Biomedical Engineering May 2017

Bachelor of Science, Biomedical Engineering May 2013

UNIVERSITY TEACHING EXPERIENCE

Department of Biomedical Engineering, the University of Akron, Akron, OH

Intro to Biomedical Engineering Design Visiting Assistant Professor Spring 2021

Introductory design course for freshmen sequential application of FDA design process to BME applications

Developed new course materials for purely online delivery

Collaborated with instructor to redesign course materials and content for purely online delivery

Experimental Techniques in Biomechanics Visiting Assistant Professor

Laboratory-based course for upperclassmen biomedical track students to apply principles of biomechanics

Developed new lecture content to review proper experimental design and statistical analysis of data using MatLab built-in functions

Collaborated with instructor to redesign course materials and content for purely online delivery

Successfully provided access to students to remotely perform laboratory experiments

Developed and introduced new mini-project to introduce students to COMSOL finite element modeling

Tools for Biomedical Engineering (Lecture and Lab) Visiting Assistant Professor Fall 2020

Introductory course for incoming Biomedical Engineering majors, MatLab & SolidWorks intensive course

x Presented and prepared 2 weekly lectures with instructor

Supplemented new lecture content, developed novel assignments, developed assessments based on student learning outcomes

Co-taught lab portion in purely online format, assisted students with troubleshooting circuits, developing critical thinking skills in hands-on labs

Department of Biology & Biomedical Engineering
Rose-Hulman Institute of Technology, Terre Haute, IN
Systems Accounting and Modeling II – Visiting Assistant Professor

Spring 2020

Conservation of extensive properties, constitutive relations, constraints, and equilibrium modeling assumptions

Mentorship and development program that helps graduate students from any discipline discern whether they are interested in pursuing faculty careers in liberal arts colleges or small universities

Met with mentor to discuss advantages and challenges of faculty careers at liberal arts institutions

Attended multiple professional development workshops to continue advancement of teaching abilities

Ophthalmic Engineering Journal Club, The Ohio State University, Columbus, OH

2017-Present

President, Founding Member

Organized weekly meetings of biomedical engineering graduate students to present and discuss scientific literature relating to ophthalmology and ophthalmic engineering, practiced oral presentation skills, developed a network of peers

Exam Committee Lead, Engineering Education Innovation Center, The Ohio State University, Columbus, OH

Spring 2015

Led committee to create exam materials for Fundamentals of Engineering Course Sequence (14 sections)

Generated multiple choice, short answer, and extended response questions, and corresponding keys

Contributed to, and organized database of exam questions

PUBLICATIONS

Bussett, K., Goebel, K., Lee, V., Alumbaugh, L., Calhoun M., Nguyen, B., & Osmar, ETN hydrogels as a potential anti-inflammatory drug delivery system targeted to osteoarthritic knees. *Biomed Sci Instrum* (2021), (57)(2)

Pappa, C.S., Nguyen, B., Mahmoud, A.M., Agarwal, G., Roberts, C. Effect of penetration enhancer with novel corneal softening using recombinant human decoron in porcine eyes. *Experimental Eye Research* (2021), 206:108542

Nguyen, B.A., Roberts, C.J., & Reilly, M.A. Biomechanical contribution of the sclera to dynamic corneal response with induced deformation in human donor eyes. *Experimental Eye Research* (2019), 191:107904

Nguyen, B. A., Roberts, C. J., & Reilly, M. A. (2018). Biomechanical impact of the sclera on corneal deformation response to an air puff: a finite-element study. *Frontiers in Bioengineering and Biotechnology*

TEACHING PRESENTATIONS

Coordinated with regional LIONS Eye Bank to acquire donor tissues
Assisted with new ophthalmic equipment training
Orthopaedic Biomaterials Research Alan S. Litsky, M.D., D.Sc. 2013-15
Student Research Assistant
Developed novel functional prototype of system to measure grip force of otologic surgeons during bone milling to improve haptic feedback on surgical simulation system
Aided in generating protocol for generating repeatable facial fractures in cadaveric specimens

RESEARCH PRESENTATIONS

A nonlinear viscoelastic model of corneal and whole eye motion under airpuff loading by a dynamic Scheimpflug analyzer, B. Audrey Nguyen, M.S., Matthew A. Reilly, Ph.D., Cynthia J. Roberts, Ph.D., Poster Presentation. ISER Biennial Meeting 2018
Preliminary study on biomechanical contribution of the sclera to dynamic corneal response in airpuff induced deformation, B. Audrey Nguyen, M.S., Matthew A. Reilly, Ph.D., Cynthia J. Roberts, Ph.D., Poster Presentation. ARVO Annual Meeting 2018
Biomechanical impact of the sclera on corneal deformation response to airpuff: a finite-element study, B. Audrey Nguyen, M.S., Mohammad Arif Hossain, M.S., Jun Liu, Ph.D., Cynthia J. Roberts, Ph.D., Poster Presentation. ARVO Annual Meeting. 2017
Measuring Hand Forces During Bone Milling to Improve Haptic Feedback of an Otologic Surgical Simulator, Audrey Nguyen, Alan S. Litsky, M.D., D.Sc., Poster Presentation. BMES Annual Meeting. 2014

AWARDS AND HONORS

2nd place, Graduate Research Presentations, Ophthalmology Research Day Symposium, The Ohio State University 2019
2nd place, Engineering Oral Presentations, Edward F. Hayes Graduate Research Forum, The Ohio State University 2018
Diane M. Hunn Service Award, Science Education Council of Ohio 2016

PROFESSIONAL SOCIETY MEMBERSHIPS

ARVO Association for Research in Vision and Ophthalmology
BMES Biomedical Engineering Society
ISER International Society for Eye Research