

EMILY HAMMOND, Ph.D.

CURRICULUM VITAE

Department: School of Engineering and Applied Sciences
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EDUCATIONAL AND PROFESSIONAL HISTORY

Professional and academic positions held

2017- Present Teaching Assistant Professor
School of Engineering and Applied Sciences, University at Buffalo, New York

2012-2017 Graduate Research Assistant
Department of Radiology, University of Iowa, Iowa

June-August 2015, 2016, 2017 Graduate Teaching Assistant
College of Engineering, University of Iowa, Iowa

Education

2012-2017 Ph.D. Biomedical Engineering
University of Iowa, Iowa
Dissertation title: "Longitudinal medical imaging approaches for characterization of porcine cancer models"
Thesis advisor: Jessica C. Sieren, Ph.D.

2014-2016 Graduate Certificate in College Teaching
University of Iowa, Iowa

2008-2012 B.S. Biomedical Engineering
Minor: Math
Milwaukee School of Engineering, Wisconsin

Professional Development

2017-2018 "The Next 10 Years: Helping STEM Students Thrive" Series
University at Buffalo and Cornell University, New York
Instructors: Various
Topics: Higher Education Trends, Institutional Practices, Learning Spaces, Introductory Courses in STEM

- November 2017 “Copyright III: Using copyrighted works in your classroom”
University Libraries, University at Buffalo, New York
Instructor: Karlen Chase
- June-August 2017 “CIRTL Summer Series” (Awarded CIRTL Practitioner Level)
Center for the Integration of Research, Teaching, and Learning – University of Iowa, Iowa
Instructor: Erin Barnes, Ph.D.
- October 2016 “Universal Design for Learning”
Office of Teaching, Learning, and Technology, University of Iowa, Iowa
Instructor: Ranthony Edmonds, Ph.D. Candidate, Teaching Research Fellow
- Fall 2016 “Reading and Learning Community”
Office of Teaching, Learning, and Technology, University of Iowa, Iowa
Instructor: Lisa Kelly, Ph.D.
- June-August 2016 “CIRTL Summer Series” (Awarded CIRTL Associate Level)
Center for the Integration of Research, Teaching, and Learning – University of Iowa, Iowa
Instructor: Lisa Kelly, Ph.D.
- March 2016 “Don’t let your students wait to be called on”
Office of Teaching, Learning, and Technology, University of Iowa, Iowa
Instructor: Sebastian De Pascuale, Ph.D. Candidate
- June-August 2015 “Teaching your research” Workshop series
University of Iowa, Iowa
Instructor: Darren S. Hoffman, Ph.D., Lisa Kelly, Ph.D.
- July 2015 “Critical Thinking”
Office of Teaching, Learning, and Technology, University of Iowa, Iowa
Instructor: Lisa Kelly, Ph.D.
- March 2014 “Instructional Methods Workshop”
University of Iowa, Iowa
Instructor: Darren S. Hoffman, Ph.D.

Honors, Awards, Recognitions, Outstanding Achievements

- 2017 Teaching-As-Research (TAR) Fellowship Award

University of Iowa, Iowa

2016-2017 Ballard Seashore Dissertation Fellowship Award
University of Iowa, Iowa

2016, 2015, Graduate Student Senate Travel Grant
2014, 2013 University of Iowa, Iowa

2014, 2013 Executive Council of Graduate and Professional Students Travel Grant
University of Iowa, Iowa

2012-2016 Presidential Graduate Research Fellowship Award
University of Iowa, Iowa

2012 Outstanding Senior Biomedical Engineering Student
Milwaukee School of Engineering, Wisconsin

TEACHING

Teaching assignments on a semester by semester basis

University at Buffalo

Spring 2018 EAS230 Engineering Computations (9 credits)

Fall 2017 EAS199 Grand Challenges for Engineers (3 credits)
Small Groups for CHE107 Introduction to Chemistry for Engineers
Small Groups for MTH141 Calculus I

University of Iowa

Summer ENGR:2120 Fundamentals of Engineering: Circuits
2017 Teaching Assistant (20 hr/wk)

Fall 2016 ENGR:1300 Engineering Problem Solving
Teaching Practicum (4 hr/wk)

Summer ENGR:2120 Fundamentals of Engineering: Circuits
2016 Teaching Assistant (20 hr/wk)

Fall 2015 BME:2200 Systems, Instrumentation, and Data Acquisition
Teaching Practicum (2 week guest lecturer on Digital Signal Processing)

Summer ENGR:2120 Fundamentals of Engineering: Circuits
2015 Teaching Assistant (20 hr/wk)

Invited seminar, Cornell College, Mount Vernon, IA (October 14, 2016)

SCHOLARSHIP/PROFESSIONAL PRODUCTIVITY

Publications or creative works

Peer-reviewed papers

1. J.C. Sieren, D.K. Meyerholz, X. Wang, B. Davis, J. D. Newell, **E. Hammond**, J. Rohret, F. Rohret, J. Struzynski, J.A. Goeken, P.W. Naumann, M.R. Leidinger, J. Hagen, R. VanRheeden, B.W. Darbro, D. E. Quelle, C.S. Rogers, "Translational imaging of tumorigenesis in a TP53 porcine cancer model", *Journal of Clinical Investigation*, 124(9): 4052-66 (2014) PMID: 25105366
2. S.K.N. Dilger, J. Uthoff, A. Judisch, **E. Hammond**, S.L. Mott, B.J. Smith, J.D. Newell, Jr., E.A. Hoffman, J.C. Sieren. "Improved pulmonary nodule classification utilizing quantitative lung parenchyma features", *J. Med. Imag.* 2 (4): 041004 (2015) PMID: 26870744
3. **E. Hammond**, J.D. Newell, S.K.N. Dilger, N. Stoyles, J. Morgan, F.A. Rohret, J.P. Sieren, D.R. Thedens, E.A. Hoffman, D. K. Meyerholz, J.C. Sieren, "Computed Tomography and Magnetic Resonance Imaging for Longitudinal Characterization of Lung Structure Changes in a Yucatan Miniature Pig Silicosis Model", *Special Issue: Swine in Translational Research, Toxicologic Pathology*, 44(3): 373-81 (2016) PMID: 26839326
4. **E. Hammond**, C. Sloan, J.D. Newell, J.P. Sieren, M. Saylor, C. Vidal, S. Hogue, F. De Stefano, A. Sieren, E.A. Hoffman, J.C. Sieren, "Comparison of Low and Ultra-Low Dose Computed Tomography Protocols Through Quantitative Lung Airway and Parenchyma Assessment", *Medical Physics*, 44(9): 4747-4757 (2017) PMID: 28657201
5. **E. Hammond**, K.S. Chan, J.C. Ames, N. Stoyles, C.M. Sloan, J. Guo, J.D. Newell Jr., E.A. Hoffman, J.C. Sieren, "Impact of Advanced Detector Technology and Iterative Reconstruction on Low Dose Quantitative Assessment of Lung Computed Tomography Density in a Biological Lung Model", *Medical Physics* (*accepted with revisions*)
6. **E. Hammond**, N. Koehn, F. De Stefano, R. Deutsch, S.K.N. Dilger, E.A. Hoffman, J.D. Newell, J.C. Sieren, "A multi-level registration method to align multi-modal, longitudinal image data for characterization of swine disease models", (*in progress*)

Non-peer reviewed papers

1. **E. Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, J.D. Newell Jr., J.C. Sieren. "Consistent and reproducible positioning in longitudinal imaging for phenotyping genetically modified swine", *Proceedings of SPIE Medical Imaging*, (2015)
2. S.K.N. Dilger, A. Judisch, J. Uthoff, **E. Hammond**, J.D. Newell Jr., J.C. Sieren. "Improved pulmonary nodule classification utilizing lung parenchyma texture features", *Proceedings of SPIE Medical Imaging* (2015)

Conference Abstracts/Posters - External

1. **E. Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, F. Rohret, D.R. Thedens, J.D. Newell Jr., C.S. Rogers, E.A. Hoffman, J.C. Sieren, "Multi-Imaging Modality, Longitudinal, Whole Body Screening Development for Phenotyping Genetic Disease Models in Swine", *American Thoracic Society* (Philadelphia, PA, USA, 2013) (**\$300 Graduate Student Senate Travel Fund Award & \$335 Executive Council of Graduate and Professional Studies Travel Grant**)
2. J.C. Sieren, X. Wang, B. Davis, J.D. Newell Jr., **E. Hammond**, J. Rohret, F. Rohret, J. Struzynski, J.A. Goeken, P.W. Naumann, M.R. Leidinger, J. Hagen, R. Van Rheeden, B.W. Darbro, D.E. Quelle, D.K. Meyerholz, C.S. Rogers, "Translational Imaging of Tumorigenesis in a TP53 Porcine Cancer Model", *American Association for Cancer Research* (San Diego, CA, USA, 2014)
3. **E. Hammond**, N. Stoyles, S.K.N. Dilger, J. Morgan, F. Rohret, C.S. Rogers, J.D. Newell Jr., J.C. Sieren, "Phenotyping genetically modified swine models: Systematic detection of pulmonary abnormalities in computed tomography", *American Thoracic Society* (San Diego, CA, USA, 2014) (**\$300 Graduate Student Senate Travel Fund Award & \$150 Executive Council of Graduate and Professional Studies Travel Grant**)
4. N. Stoyles, **E. Hammond**, J. Morgan, K. Iyer, E.A Hoffman, J.C Sieren, "Closed-Loop Perfusion Fixation for the Validation of Quantitative Computed Tomography Metrics", *American Thoracic Society* (San Diego, CA, USA, 2014)
5. J.P. Sieren, J.D. Newell Jr., J. Ames, **E. Hammond**, J. Guo, E.A. Hoffman, J.C. Sieren, "Quantitative Assessment of Lung CT Density Using New CT Detector Technology to Lower Radiation Exposure in a Pig Model", *American Thoracic Society* (San Diego, CA, USA, 2014)
6. J.C. Sieren, D.K. Meyerholz, X. Wang, B. Davis, J.D. Newell Jr., **E. Hammond**, J. Rohret, F. Rohret, J. Struzynski, J.A. Goeken, P.W. Naumann, M.R. Leidinger, J. Hagen, R. VanRheeden, B.W. Darbro, D.E. Quelle, C.S. Rogers, "Translational imaging of tumorigenesis in a TP53 porcine cancer model", *Swine Biomedical Research* (Raleigh, NC, USA, 2014)
7. S.K.N. Dilger, A. Judisch, J. Uthoff, **E. Hammond**, J.D. Newell Jr., J.C. Sieren. "Improved pulmonary nodule classification utilizing lung parenchyma texture features", *SPIE Medical Imaging*, (Orlando, FL, 2015)
8. **E. Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, J.C. Sieren, "Consistent and reproducible positioning in longitudinal imaging for phenotyping genetically modified swine", *SPIE Medical Imaging*, (Orlando, FL, 2015) (**\$300 Graduate Student Senate Travel Fund Award**)
9. Judisch, N. Stoyles, **E. Hammond**, C. Sloan, E.A. Hoffman, J.C. Sieren, "Analysis of dosage effects on the comparison of in-vivo and fixed ex-vivo airway measurements from computed tomography scans", *American Thoracic Society* (Denver, CO, USA, 2015)
10. J.C. Sieren, K.S. Chan, J.P. Sieren, J. Ames, J. Guo, **E. Hammond**, N. Stoyles, A. Judisch, J.D. Newell Jr., E.A. Hoffman, "Impact of stellar detector technology and safire reconstruction on low dose quantitative assessment of lung computed tomography density", *American Thoracic Society* (Denver, CO, USA, 2015)
11. T.M. Dougherty, J.D. Newell Jr., C.M. Sloan, **E. Hammond**, S. Hogue, E.A. Hoffman, "3rd Generation Dual Source/Dual Energy CT Allows for Reduction in Radiation Dose

- and Iodine Concentration Used to Assess Pulmonary Perfused Blood”, *American Thoracic Society* (San Francisco, CA, USA, 2016)
12. C.M. Sloan, J.C. Sieren, J.D. Newell Jr, J. Sieren, M. Shirk, C. Vidal, S. Hogue, F. DeStefano, **E. Hammond**, E.A. Hoffman, “Comparison of Low and Ultra-Low Dose Computed Tomography Protocols Through Quantitative Lung Airway Assessment”, *American Thoracic Society* (San Francisco, CA, USA, 2016)
 13. S.K.N. Dilger, J. Uthoff, **E. Hammond**, S.L. Mott, B.J. Smith, M. Ahuja, M. Gailey, A. McGruder, J.D. Newell, E.A. Hoffman, J.C. Sieren, “Clinical Computer-Aided Diagnosis Tool for Pulmonary Nodule Characterizations Shows Improved Performance with the Inclusion of Nodule-Associated Parenchymal Features”, *American Thoracic Society* (San Francisco, CA, USA, 2016)
 14. S.K.N. Dilger, J. Uthoff, **E. Hammond**, M. Ahuja, M. Gailey, A. McGruder, J.D. Newell, E.A. Hoffman, J.C. Sieren, “Identifying Longitudinal Computed Tomography Biomarkers of Malignancy to Improve Noninvasive Lung Cancer Diagnosis”, *American Thoracic Society* (San Francisco, CA, USA, 2016)
 15. **E. Hammond**, F. De Stefano, S.K.N. Dilger, E.A. Hoffman, J.D. Newell, J.C. Sieren, “Multi-Level Registration of Multi-Modality and Longitudinally Acquired Thoracic Images for Lung Assessment in a Swine Exposure Model”, *American Thoracic Society* (San Francisco, CA, USA, 2016) (**\$500 Graduate Student Senate Travel Fund Award**)
 16. J. Uthoff, N. Koehn, S.K.N. Dilger, **E. Hammond**, F. De Stefano, M. Muralidharan, E.A. Hoffman, J.D. Newell, R. Sanchez, J.C. Sieren, “Longitudinal Comparison of Four Mathematical Prediction Models of Solitary Pulmonary Nodules Imaged on Computed Tomography”, *American Thoracic Society* (San Francisco, CA, USA, 2016)
 17. **E. Hammond**, D.E. Quelle, M.H. Abou Alaiwa, K. Stark, M. Saylor, S. Hogue, F. Rohret, J.D. Newell, R.M. Sheehy, U.S. Shaik Amjad, D.K. Meyerholz, B.W. Darbro, C.S. Rogers, J.C. Sieren, “Development of a Lung Cancer Pig Model: Non-invasive Characterization with Computer Tomography”, *American Thoracic Society* (Washington D.C, USA, 2017)

Conference Posters – Internal (University of Iowa)

1. **Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, F. Rohret, D.R. Thedens, J.D. Newell Jr., C.S. Rogers, E.A. Hoffman, J.C. Sieren, “Multi-Imaging Modality, Longitudinal, Whole Body Screening Development for Phenotyping Genetic Disease Models in Swine”, *University of Iowa Engineering Research Open House* (University of Iowa, IA, USA, 2013)
2. **E. Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, F. Rohret, D.R. Thedens, J.D. Newell Jr., C.S. Rogers, E.A. Hoffman, J.C. Sieren, “Multi-Imaging Modality, Longitudinal, Whole Body Screening Development for Phenotyping Genetic Disease Models in Swine”, *Holden Comprehensive Cancer Center Research Retreat* (University of Iowa, IA, USA, 2013)
3. **E. Hammond**, N. Stoyles, S.K.N. Dilger, J. Morgan, F. Rohret, C.S. Rogers, J.D. Newell Jr., J.C. Sieren, “Phenotyping genetically modified swine models: Systematic detection of pulmonary abnormalities in computed tomography”, *University of Iowa Engineering Research Open House* (Iowa City, IA, 2014)
4. J.C. Sieren, D.K. Meyerholz, X. Wang, B. Davis, J.D. Newell Jr., **E. Hammond**, J. Rohret, F. Rohret, J. Struzynski, J.A. Goeken, P.W. Naumann, M.R. Leidinger, J.

- Hagen, R. VanRheeden, B.W. Darbro, D.E. Quelle, C.S. Rogers, “Translational imaging of tumorigenesis in a TP53 porcine cancer model”, *Holden Comprehensive Cancer Center Research Retreat* (University of Iowa, IA, USA, 2014)
5. **E. Hammond**, N. Stoyles, S.K.N. Dilger, J. Morgan, F. Rohret, C.S. Rogers, J.D. Newell Jr., J.C. Sieren, “Phenotyping genetically modified swine models: Systematic detection of pulmonary abnormalities in computed tomography”, *Holden Comprehensive Cancer Center Research Retreat* (University of Iowa, IA, USA, 2014)
 6. N. Stoyles, **E. Hammond**, J. Morgan, K. Iyer, E.A. Hoffman, J.C. Sieren, “A Mirror Image: Creating a lung morphology model for the validation of quantitative CT metrics”, *University of Iowa Fall Undergraduate Research Fair* (Iowa City, IA, USA, 2014)
 7. **E. Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, J.C. Sieren, “Consistent and reproducible positioning in multimodality longitudinal imaging for phenotyping genetically modified swine”, *University of Iowa Engineering Research Open House* (Iowa City, IA, 2015)
 8. S.K.N. Dilger, A. Judisch, J. Uthoff, **E. Hammond**, J.D. Newell, Jr., J.C. Sieren, “Improved pulmonary nodule classification utilizing lung parenchyma features”, *University of Iowa Engineering Research Open House* (Iowa City, IA, 2015)
 9. **E. Hammond**, S.K.N. Dilger, N. Stoyles, A. Judisch, J. Morgan, J.C. Sieren, “Consistent and reproducible positioning in longitudinal imaging for phenotyping genetically modified swine”, *Holden Comprehensive Cancer Center Research Retreat* (University of Iowa, IA, USA, 2015)
 10. **E. Hammond**, J. Dakai, T.J. Waldron, N. Koehn, F. De Stefano, C. Sloan, F.A. Rohret, C.S. Rogers, D.E. Quelle, B.W. Darbro, J.D. Newell Jr., D.K. Meyerholz, P.K. Saha, J.C. Sieren, “Exploration of an inducible sarcoma model in TP53 mutant Yucatan miniature pigs”, *Holden Comprehensive Cancer Center Research Retreat* (University of Iowa, IA, USA, 2016)
 11. **E. Hammond**, D.E. Quelle, M.H. Abou Alaiwa, K. Stark, M. Saylor, S. Hogue, F. Rohret, J.D. Newell, R.M. Sheehy, U.S. Shaik Amjad, D.K. Meyerholz, C.H. Chan, T.S. Sato, B.W. Darbro, C.S. Rogers, J.C. Sieren, “Development of a Conditionally-Activated KRAS Cancer Pig Model: Non-invasive Characterization with Medical Imaging”, *Holden Comprehensive Cancer Center Research Retreat* (University of Iowa, IA, USA, 2017)

SERVICE

Memberships in Professional Organizations

National

- | | |
|--------------|---|
| 2018-Present | Member, American Society for Engineering Education |
| 2013-2017 | Trainee Member, American Thoracic Society |
| 2014-2015 | Student Member, International Society for Optics and Photonics (SPIE) |
| 2010-2012 | Student Member, IEEE |

University of Iowa

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| 2014-2017 | Trainee Member, Holden Comprehensive Cancer Center |
| 2012-2017 | Member, Iowa Comprehensive Lung Imaging Center |
| 2012-2017 | Member, Iowa Institute of Biomedical Imaging |

Departmental, Collegiate, and University Involvement

University at Buffalo

- Spring 2018 Search Committee Member: Department of Engineering Education Chair
March 2018 Women in Science and Engineering: Accepted Student Day lecturer

University of Iowa

- Fall 2017 Graduate Student Spotlight, University of Iowa, Iowa City, IA
(<https://www.engineering.uiowa.edu/news/biomedical-engineering-launches-student-video-spotlight>)
April 2016 Judge, Spring Undergraduate Research Fair
Fall 2016 Judge, Fall Undergraduate Research Fair
Fall 2015 Judge, Fall Undergraduate Research Fair

Relevant community involvement

- August 2017 Volunteer, Servolution, LIFEchurch, North Liberty, Iowa
Spring 2016 Running partner, Girls on the Run, *Run 5K May*
August 2015 Volunteer, Servolution, LIFEchurch, North Liberty, Iowa
August 2015 Team member, Children's Tumor Foundation, NF Walk
Spring 2015 Running partner, Girls on the Run, *Run 5K May*
Fall 2012 Volunteer, Girls on the Run, *Run 5K November*