

Curriculum Vitae

Renata F. Ramos

Contact Information:

Department of Bioengineering

Rice University

6100 Main St. MS 390

Houston, TX 77005

Phone: (713) 348-2203

Email: renata.ramos@rice.edu

URL: www.bioengineering.rice.edu/faculty/Renata_Ramos.aspx

Education

- 2008 – 2010 Rice University
Department of Bioengineering
Teaching Post-doctoral Fellow
- 2003 – 2008 The University of Arizona
Doctor of Philosophy, Biomedical Engineering
Minor: Physiological Sciences
Advisor: W. Daniel Stamer
Doctoral Thesis Title: “Evaluation of the Effects of Cyclic Ocular
Pulse on Conventional Outflow”
- 1998 - 2002 Instituto Tecnológico y de Estudios Superiores de Monterrey
BS. Mechanical Engineering (*summa cum laude*)
Minor: Industrial Design / Mechanical Design
- AY 2000 Midwestern State University
Mechanical Engineering
International Exchange Program
- Summer 2001 Universidad Pontificia Comillas, Spain
International Summer Exchange Program
- Summer 2002 Central Michigan University
Penn College of Technology
International Summer Exchange Program

Appointments and Professional Experience

- 2014 – present Director of Undergraduate Studies
Department of Bioengineering
Rice University
- 2010 – present Lecturer
Department of Bioengineering
Rice University
- 2008 Assistant Research Scientist
Department of Ophthalmology
The University of Arizona
- 2006 – 2007 Consultant,
Allergan, Inc. Irvine, CA.
Anterior segment perfusion design, construction and installation.

2002 – 2003 Industrial and Automotive Engineering
Jabil Circuit, Mexico

2001 – 2002 Math, Chemistry and Physics Tutor

Undergraduate Teaching

Rice University

- **Biomedical Instrumentation Laboratory Module (2008 – present)**
Students gain hands-on experience designing and building biomedical instrumentation circuits and systems.
Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016
- **Mechanical Testing Laboratory Module (2008 – present)**
Students design and conduct a series of tests to elucidate the mechanical and material properties of animal tissue using mechanical testing equipment.
Fall 2008, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Spring 2017
- **Systems Physiology Laboratory Module (2009 – present)**
Students explore physiological systems through measurement of biological signals such as EEG, ECG, and EMG.
Spring 2009, Spring 2010, Spring 2011, Spring 2013, Spring 2014, Spring 2016, Spring 2017
- **Troubleshooting Workshop for Clinically-Relevant Biomedical Equipment (2014 – present)**
Students learn the principles of operation and how to troubleshoot, repair and maintain standard biomedical equipment used in hospitals.
Fall 2014, Fall 2015, Fall 2016
- **Advanced Instrumentation Laboratory Module (2009 - 2013)**
Students design and build a biomedical instrumentation device by using LabVIEW to perform advanced signal processing.
Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013
- **Independent Undergraduate Research (2014 – 2016)**
Students perform independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member.
Fall 2014, Spring 2015, Fall 2015, Spring 2016, Summer 2016

- Bioengineering Undergraduate Research (2014 – 2016)
Students perform independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member.
Fall 2014, Spring 2015, Fall 2015, Spring 2016
- Laboratory in Tissue Culture
Introduction to tissue culture techniques, including cell passage, cell viability, and cell attachment and proliferation assays. Students complete quantitative analysis of their data.
Summer 2011
- Biomechanics (2010)
Core course that introduces the fundamental principles of mechanics applied to the analysis and characterization of biological systems.
Spring 2010
- Biofluids (2009)
Introduction to the basic principles of fluid mechanics, emphasizing their importance in the study of biological systems.
Spring 2009
- Fundamentals of Engineering – Summer Bridge Program (2009)
Project-based course introducing engineering design to incoming undergraduate freshman students that show interest in pursuing a career in engineering.
Summer 2009
- Engineering Design Internship (2014)
Project-based program focused on designing, testing and prototyping several engineering design projects.
Summer 2014
- Mentor: Bioengineering Capstone Senior Design (2010 – 2014)
Technical advisor for several bioengineering senior design teams.
Fall 2010, Spring 2011, Fall 2012, Spring 2013, Fall 2013, Spring 2014
- Mentor: Introduction to Engineering Design (2012 – 2016)
Technical advisor for several engineering freshman design teams.
Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Fall 2015, Spring 2016, Fall 2016

The University of Arizona

- Measurement and Data Analysis in BME
Teaching Assistant, *Spring 2007*
- Scientific Writing Strategies, Skills and Ethics
Guest Speaker, *Fall 2007*

Educational Responsibilities

- Director of Undergraduate Studies, Department of Bioengineering. *2014 - present*
 - Managed most aspects of undergraduate program, including curriculum and course development and changes
 - Leadership around course scheduling and staffing for undergraduate courses
 - Primary advisor for all undergraduate students
 - Lead role in developing and assessing program outcomes for ABET and SACS
- ABET Accreditation Lead for the Department of Bioengineering. *2014 – present*
- SACS Accreditation Lead for the Department of Bioengineering. *2014 – present*
- Co-instructor for Rice Emerging Scholars Program, Engineering Design Module, Rice University. *Summer 2015*
- Curriculum Development Biomedical Technician Program.
Directed a workshop to help faculty redesign the curriculum for the Biomedical Technician program at Tegbare-id Polytechnic College in Addis Ababa, Ethiopia.
Summer 2013
- Course Development: Developed and taught a Biomechanics core course for junior undergraduate students in the department of Bioengineering. *Spring 2010*
- Course Development: Developed and taught a project-based course introducing engineering design to incoming undergraduate freshman students that show interest in engineering majors. *Summer 2009*
- Course Development: Developed and taught a Biofluids elective course for undergraduate junior and senior Bioengineering students. *Spring 2009*
- Contributed to the curriculum review and data collection that led to the department's ABET accreditation. *2009 - 2011*
- Primary Faculty Mentor for four senior design bioengineering capstone projects. *2010 – 2011*
- Physiology lecture and demonstration for the Rice Institute of Biosciences and Bioengineering Summer Academy for High School students. *Summer 2009 – 2011*

Educational Grants and Awards

- American Society for Engineering Education (ASEE) Biomedical Engineering Division (BED) Teaching Award. *2014*
- George R. Brown Prize for Superior Teaching, Rice University (selected based on alumni votes). *2014*
- Excellence in Academic Advising Award, Rice University (based on nominations from faculty, students and staff). *2014*
- Enriching Engineering Education Grant: Increasing Engineering Identity in First-Year Students by Developing Engineering Curriculum to Supplement Freshman-Level Physics Courses, \$9,000. *2016*
- Brown Foundation Teaching Grant: Tools to Improve Troubleshooting Skills in Bioengineering. \$2,500. *2014*
- Department of Bioengineering Teaching Award. *2013*
- Arts Initiative Fund Grant: Multidisciplinary Design Teams for Social and Innovative Impact. *2014*
- Brown Foundation Teaching Grant: Learning by Teaching, student driven contents for Bioengineering, \$4,975. *2013*
- National Eye Institute Predoctoral Fellowship Award for Advanced Training in Vision Research. Fundamental Issues in Vision Research. Marine Biological Laboratory, Woods Hole, MA. *2006*
- The Association for Research in Vision and Ophthalmology Travel Award. ARVO 2006. Fort Lauderdale, FL. *2006*
- National Eye Institute Predoctoral Award (F31). *2005 – 2008*
Ruth L. Kirschstein National Research Service Award. (*application score: 119*)
- National Institute of Health Pre-doctoral Cardiovascular Training Grant. *2004*.
- Initiative for Maximizing Student Diversity (IMSD) National Institute of Health Graduate Study Award. *2003 – 2004*
- Graduated with honors. BS Mechanical Engineering. ITESM. *2002*
- Excellence Full Academic Scholarship, ITESM. *1998 – 2002*
- Dean's Honor Roll. Midwestern State University. *2000*
- SAE Mini Baja West Competition. *2002*
- Perfect Score in College Admission Test for ITESM.
- Graduated with honors. Instituto La Salle (high school). *1998*

Undergraduate Advising and Mentoring

- Residential College Faculty Resident Associate. *2011 – present*
 - Lived with 300+ undergraduate students.
 - Provided academic, career and personal advice.
- Engineering Divisional Advisor. *2010 – present*
 - Academic advising for all new engineering students in the residential college.
- Bioengineering Major and Transfer Credit Advisor. *2014 – present*
- Faculty Fellow for Wiess Residential College. *2015 – present*
- Faculty Advisor for First Year Mentoring Program. *2011 – 2016*
- Faculty Mentor for Empowering Leadership Alliance scholar – Mentoring and advising program designed to support underrepresented minority students in STEM fields at Rice University. *2011– present*
- Faculty Advisor for RicEmpower – student association involved in science outreach to Houston high schools. *2010 – 2015*
- Residential College Faculty Associate. *2009 - 2011*

University Service Activities

- Rice University Committee on Undergraduate Curriculum. *2015 - present*
- Rice University Academic and Scholarly Technologies Subcommittee. *2015 - present*
- Rice University Committee on Teaching. *2012 - 2016*
- Rice University Health Professions Advising Committee member. *2013 – present*
- Bioengineering Undergraduate Academic Affairs Committee Chair. *2014 – present*
- Bioengineering Undergraduate Advising Committee Chair. *2014 – present*
- Bioengineering ABET Committee Chair. *2014 – 2015*
- Bioengineering Undergraduate Advising and Awards Committee Chair. *2015 – present*
- Bioengineering ABET Committee Member. *2013 – 2014*
- Bioengineering Undergraduate Student Awards/Fellowships and Alumni Awards Committee Member. *2013 – 2015*
- Bioengineering Undergraduate Academic Affairs Committee Member. *2010 – 2013*
- Bioengineering Student Awards and Mentoring Committee Member. *2010 – 2013*
- Wiess College Resident Associate. *2011 - present*
- Peer teaching evaluator for non-tenure track faculty in School of Engineering. *2015 – present*
- Enhancing Engineering Education Grants Review Committee (School of Engineering).. *2017*

Professional Development Activities

- Institute for the Development of Excellence in Assessment Leadership (IDEAL). Baltimore, MD. *August 2016*
- National Effective Teaching Institute (NETI). Montreal, Canada. *July 2015*
- Hands-on Activities for Continuous-Time Signals and System Courses Workshop. *June 2014*
- Scientia Conference on Research and Innovation in Undergraduate Science and Engineering Education. *February 11-12, 2011*
- Effective College Teaching Workshop. *August 19-20, 2010*
- Mental Health First Aid Course. *March 2012*
- American Society of Engineering Education (ASEE)
 - Biomedical Engineering Officer (Member-at-Large). *2016 - present*
 - Awards selection Committee, Biomedical Engineering. *2016 - present*
 - Manuscript Reviewer, Biomedical Engineering ASEE conference *2016 - present*
 - Poster Session Judge, Biomedical Engineering ASEE conference *2016 - present*
 - Annual Meeting. *2009, 2013-2016*
- Biomedical Engineering Society Annual Meeting.
 - Annual Meeting. *2014, 2015*

Educational Publications and Presentations

- **Ramos RF**. Addressing Muddy Points Early in the Semester Increases Student Learning in a Bioinstrumentation Laboratory Course. *American Society of Engineering Education Annual Conference, Seattle, WA, June 2015*
- **Ramos RF**, Ghosn B, Livingston C. Educational Videos Help Improve Student Understanding in a Laboratory Course. *Biomedical Engineering Society. 2015*
- **Ramos RF**. Engaging Students in the Classroom: Practices to Enhance Learning. *Center for Teaching Excellence, Rice University. Invited presentation. 2014*
- **Ramos RF**. Introduction of active learning techniques increases student learning in a systems physiology laboratory course. *American Society of Engineering Education Annual Conference, Indianapolis, IN, June 2014.*
- **Ramos RF**. Receiving Feedback from Instructor and Peers Increases the Quality of Written Reports in a Biomedical Instrumentation Laboratory Course. *Biomedical Engineering Society. 2014*

Research Publications

- Jarjour J, Juarez AM, Kocak DK, Liu NJ, Tabata MM, Hawthorne KM, **Ramos RF**, Abrams SA. A Novel Approach to Improving Fat Delivery in Neonatal Enteral Feeding. *Nutrients*. 2015 June; 7(6): 5051 – 5064
- Stamer WD, **Ramos RF**. Rapid Oscillations in Intraocular Pressure. *Clinical Glaucoma Care: The Essentials*. Volume editors: John Samples, Paul Schacknow. Springer. 2014
- Sung C, Kamath RR, Cui Y, Ouyang C, Carstens E, **Ramos RF**, Oden, ZM. Design of a Novel Mechanical Syringe Pump for Neonatal Care in Low-Resource Settings *Global Humanitarian Technology Conference (GHTC), IEEE*, 78 – 83.
- Stamer WD, **Ramos RF**. The importance of oscillations of Intraocular Pressure. *The Glaucoma Book: A Practical, Evidence-Based Approach to Patient Care*. Volume editors: Paul Schacknow and John Samples. Springer. 2010
- **Ramos RF**, Sumida GM, Stamer WD. Cyclic Mechanical Stress and Trabecular Meshwork Cell Contractility. *Investigative Ophthalmology and Visual Science*. 2009 Apr; 50 (1): 3826-3832
- **Ramos RF**, Stamer WD. Effects of cyclic intraocular pressure on conventional outflow facility. *Investigative Ophthalmology and Visual Science*. 2008 Jan; 49 (1): 275-281
- **Ramos RF**, Hoying JB, Witte MH, Stamer WD. Review Article. Schlemm’s canal endothelia, lymphatic or blood vasculature? *Journal of Glaucoma*. 2007 June/July; 16(4): 391-405
- Grana WA, Szivek JA, Schnepf AB, **Ramos R**. A comparison of the effects of radiofrequency treatment and mechanical shaving for meniscectomy. *Arthroscopy*. 2006 Aug; 22(8): 884-888

Research / Laboratory Experience

- 5/2008 – 8/2008 Assistant Research Scientist.
The University of Arizona
Performed cell and organ perfusions and contractility assays.
Supervisor: Dr. W. Daniel Stamer
- 5/2004 – 5/2008 Doctoral Candidate.
Biomedical Engineering Interdisciplinary Program.
Modified and tested the anterior chamber perfusion system to study the effect of intraocular pressure oscillations.
Supervisor: Dr. W. Daniel Stamer.
- 2/2004 - 4/2004 Laboratory Rotation.
Biomedical Engineering Interdisciplinary Program.
Designed a Scheimpflug slit lamp to observe changes in the curvature of the cornea.
Supervisor: Dr. Jim Schwiegerling.
- 10/2003 - 1/2004 Laboratory Rotation.
Biomedical Engineering Interdisciplinary Program.
Conducted experiments to test and compare the mechanical effects of ablative therapy versus shaving of sheep meniscal tears.
Supervisor: Dr. John Szivek.
- 7/2003 - 10/2003 Laboratory Rotation.
Biomedical Engineering Interdisciplinary Program.
Studied the relation between intraocular pressure and outflow facility in porcine eyes.
Supervisor: Dr. W. Daniel Stamer.
- 1/2002 - 6/2002 Senior Project.
Mechanical Engineering Department.
Worked on the design of a wind turbine to provide electrical energy for Tecnologico de Monterrey.
Supervisor: Dr. Oscar Salinas.
- 5/2001 - 4/2002 Society of Automotive Engineers Baja Competition.
Mechanical Engineering Department.
Worked with a group of 6 people to design and construct an all-terrain vehicle for an intercollegiate competition.
Supervisor: Silvia Prieto.

Courses Offered

Year	Institution	Course Number and Title	Term	Hours/Week	No. Students
2007	The University of Arizona	BME 517 Measurement and Data Analysis in BME. <i>Teaching Assistant</i>	Spring	N/A	30
		PHCL 595b Scientific Writing Strategies, Skills and Ethics. <i>Guest speaker</i>	Fall	N/A	35
2008/09	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	36
		BIOE 444 Mechanical Testing Laboratory Module	Fall	8	14
		BIOE 320 Systems Physiology Laboratory Module	Spring	12	47
		BIOE 434 Biofluids	Spring	3	17
		ENGI 102 Fundamentals of Engineering	Summer	15	15
2009/10	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	43
		BIOE 444 Mechanical Testing Laboratory Module	Fall	10	16
		BIOE 445 Advanced Instrumentation Laboratory Module	Fall	3	13
		BIOE 372 Biomechanics	Spring	3	46
		BIOE 444 Mechanical Testing Laboratory Module	Spring	5	8
		BIOE 320 Systems Physiology Laboratory Module	Spring	12	64
		BIOE 444 Mechanical Testing Laboratory Module	Summer	35	6
		BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	63
2010/11	Rice University	BIOE 444 Mechanical Testing Laboratory Module	Fall	8	12
		BIOE 445 Advanced Instrumentation Laboratory Module	Fall	3	11
		BIOE 451 Bioengineering Design <i>Mentor</i>	Fall	5	20
		BIOE 320 Systems Physiology Laboratory Module	Spring	12	48
		BIOE 444 Mechanical Testing Laboratory Module	Spring	10	16
		BIOE 452 Bioengineering Design <i>Mentor</i>	Spring	5	20
		BIOE 342 Laboratory in Tissue Culture	Summer	35	14
		BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	63

Year	Institution	Course Number and Title	Term	Hours/Week	No. Students
2011/12	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	41
		BIOE 444 Mechanical Testing Laboratory Module	Fall	15	19
		BIOE 445 Advanced Instrumentation Laboratory Module	Fall	3	20
		BIOE 444 Mechanical Testing Laboratory Module	Spring	10	9
2012/13	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	57
		BIOE 444 Mechanical Testing Laboratory Module	Fall	10	16
		BIOE 445 Advanced Instrumentation Laboratory Module	Fall	3	21
		BIOE 451 Bioengineering Design <i>Mentor</i>	Fall	1	4
		ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Fall	2	10
		BIOE 320 Systems Physiology Laboratory Module	Spring	15	50
		BIOE 444 Mechanical Testing Laboratory Module	Spring	10	12
		BIOE 452 Bioengineering Design <i>Mentor</i>	Spring	1	4
		ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Spring	2	10
2013/14	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	50
		BIOE 444 Mechanical Testing Laboratory Module	Fall	10	13
		BIOE 445 Advanced Instrumentation Laboratory Module	Fall	3	9
		BIOE 451 Bioengineering Design <i>Mentor</i>	Fall	1	5
		ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Fall	2	10
		BIOE 320 Systems Physiology Laboratory Module	Spring	15	45
		BIOE 444 Mechanical Testing Laboratory Module	Spring	8	9
		BIOE 452 Bioengineering Design <i>Mentor</i>	Spring	1	5
		ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Spring	2	9

Year	Institution	Course Number and Title	Term	Hours/Week	No. Students
2014/15	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	43
		BIOE 444 Mechanical Testing Laboratory Module	Fall	8	10
		BIOE 449 Medical Bioengineering Workshop	Fall	5	24
		ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Fall	2	10
		BIOE 444 Mechanical Testing Laboratory Module	Spring	10	10
		BIOE 400/401 Engineering Undergraduate Research	F / S		
		2015/16	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall
BIOE 444 Mechanical Testing Laboratory Module	Fall			8	8
BIOE 449 Medical Bioengineering Workshop	Fall			5	23
ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Fall			2	10
BIOE 400/401 Engineering Undergraduate Research	F / S				
BIOE 320 Systems Physiology Laboratory Module	Spring			10	35
BIOE 444 Mechanical Testing Laboratory Module	Spring			4	5
ENGI 120 Introduction to Engineering Design <i>Mentor</i>	Spring			2	9
2016/17	Rice University	BIOE 385 Biomedical Instrumentation Laboratory Module	Fall	9	34
		BIOE 449 Medical Bioengineering Workshop	Fall	5	24
		ENGI 120 Introduction to Engineering Design Mentor	Fall	2	10