

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Engineering and Computer Science

Amanda Esquivel, assistant professor of mechanical engineering, Department of Mechanical Engineering, College of Engineering and Computer Science, is recommended for promotion to associate professor of mechanical engineering, with tenure, College of Engineering and Computer Science.

Academic Degrees:

Ph.D.	2008	Biomedical Engineering, Wayne State University, Detroit, MI
M.S.E.	2005	Biomedical Engineering, Wayne State University, Detroit, MI
B.S.E.	2001	Industrial and Operations Engineering, University of Michigan, Ann Arbor, MI

Professional Record:

2015 – present	Assistant Professor of Mechanical Engineering, University of Michigan-Dearborn
2013 – 2015	Lecturer, Wayne State University, Kinesiology, Health and Sport Studies
2010 – 2015	Research Scientist, Detroit Medical Center
2009 – 2010	Associate Medical Researcher, Providence Hospital
2005 – 2008	Graduate Research Assistant, Wayne State University
2003 – 2005	Biomechanical Engineer, Intier Automotive
2001 – 2003	Marketing Specialist, Magna Mirrors

Summary of Evaluation:

Teaching: Professor Esquivel is a key faculty member in the bioengineering area, while also contributing to instruction and development of mechanical engineering courses. She has been very successful in teaching, course development, and in instructional innovation. Since 2015, she has taught five different courses at undergraduate and graduate levels. She has developed two new courses: BENG470 (Advanced Biomechanics) and BENG570 (Orthopedics Biomechanics, later changed to Advanced Biomechanics). She taught the two courses as combined with each other under the common title Advanced Biomechanics. Professor Esquivel's teaching evaluations are consistently high, with a weighted average of 4.46 on the 5-point scale. She has served as a faculty advisor to three master's students and one Ph.D. student. She has also been exceptionally active in work with undergraduate students, having supervised six independent study courses and 13 senior design (capstone) projects. Several senior design projects guided by Professor Esquivel won department and college awards at the annual project competition. Her teaching is passionate, engaging, and challenging. Students in their comments compliment close attention to their progress, excellent knowledge of the modern aspects of the subject, readiness to help students, and willingness and ability to incorporate modern research into class material.

Research: Professor Esquivel's research work is in the general area of bioengineering with focus on biomechanics of the human body. The specific research topics are in such areas as sport-related injuries and injury prevention, classification of injurious loading cycles, safety of sport equipment, and application of wearable devices to evaluation of body movements. Since joining the University of Michigan-Dearborn, Professor Esquivel has received research grants and contracts totaling \$745,500, \$735,500 of which as a PI and \$10,000 as a co-PI. The most significant funding was from

the NSF (\$382,953 as a standard grant from CBET division and \$265,097 from the Major Research Instrumentation program). During her academic career, she has published 25 articles in peer-reviewed archived journals, nine of them during her work at the University of Michigan- Dearborn. Three more research publications are currently under review.

Recent and Significant Publications:

- Ajdaroski, M., Tadakala, R., Nichols, L.*, Esquivel, A. Validation of a Device to Measure Knee Joint Angles for a Dynamic Movement. *Sensors* (Basel). 2020 Mar 21;20(6). pii: E1747. doi: 10.3390/s20061747.
- Esquivel, A., Freehill, M.T., Curriero, F.C., Rand, K.L., Conte, S., Tedeschi, T., Lemos, S.E. Analysis of Non-Game Injuries in Major League Baseball. *Orthopedic Journal of Sports Medicine*. 2019 Dec 27;7(12).
- Cooley, C.N.; Baranek, T.; Warpinski, M.; Alexander, R.*, Esquivel, A. A Comparison of Head Injuries in Male and Female Lacrosse Participants Seen in US Emergency Departments from 2005-2016. *American Journal of Emergency Medicine*. 2019 Feb;37(2):199-203.
- Buice, J.*, Esquivel, A., Andrecovich, C. Accuracy of the GForceTracker for Monitoring Head Impacts in Boys and Girls Lacrosse. *ASME Journal of Biomechanical Engineering*. 2018 Oct 1;140(10).
- Esquivel, A., Sherman, S.S., Lemos, S.E., Bir, C. The Interaction of Intramuscular Ketorolac (Toradol) and Concussion in a Rat Model. *Annals of Biomedical Engineering*. 2017 June; 45(6): 1581-1588.
- Mancini, E., Kohen, R., Esquivel, A., Cracchiolo, A.M., Lemos, S.E. Comparison of ACL Strain in the MCL-Deficient and MCL-Reconstructed Knee During Simulated Landing in a Cadaveric Model. *American Journal of Sports Medicine*. 2017 April 45 (5):1090-1094.
- Lissy, M., Esquivel, A., Cracchiolo, A., Lemos, S. Biomechanical properties of tenotomy versus biceps knot in a cadaver model. *Journal of Orthopedics*. 2016 May 6;13(3):177-80.
- Houdek, C.G., Esquivel, A., Cracchiolo, A.M., Lemos, S.E. A Biomechanical Comparison of Isometric and Anatomic Medial Patellofemoral Ligament Reconstruction. *Journal of Knee Surgery*. 2016 Aug. 29 (06): 522-526.
- Tenfelde, A.M., Esquivel, A., Cracchiolo, A.M., Lemos, S.E. Temperature Change When Drilling Near the Distal Femoral Physis in a Skeletally Immature Ovine Model. *Journal of Pediatric Orthopedics*. 2016 Oct-Nov;36(7):762-7.

Service: Professor Esquivel's record significantly exceeds the record traditionally anticipated of assistant professors at the College of Engineering and Computer Science. She has served on several important departmental committees. As a chair, I am particularly grateful for her continuing enthusiasm in supporting major events, such as open houses, new student orientations, commencements, etc. She has also been active in outreach activities to local schools, from elementary to high school levels. The department views this work as exceptionally valuable due to its positive impact on promoting STEM, especially among girls. Professor Esquivel has also been active in service to the broader scientific community as a reviewer on grant review panels and research manuscripts.

External Reviewers:

Reviewer A: "Beyond her research, Dr. Esquivel has proven to be an adept teacher, valuable contributor in service to the department and her field. I am impressed by her teaching scores which are in the very good excellent range consistently. I am even more impressed by the diversity of students she has trained with most all of them coming from groups that are underrepresented in engineering."

Reviewer B: “Based on my review of her (Dr. Esquivel’s) CV and my familiarity with her work, I fully support her promotion to Associate Professor with tenure. As a former member of the promotions committee at the Warren Alpert Medical School at Brown University, I feel that her qualifications and accomplishments would make her a successful candidate for promotion at Brown University.”

Reviewer C: “I believe that Professor Esquivel’s record demonstrates meaningful, high quality, and impactful contributions to the requisite areas of scholarship, teaching, and professional service. Her work has been innovative and creative. She has disseminated research and development results through well respected biomedical, medical, and sports medicine journals as well as highly regarded and relevant conference venues.”

Reviewer D: “In conclusion, I enthusiastically endorse the tenure and promotion of Dr. Esquivel. Her performance during the tenure clock is among the top 10% in her peer group who are working in the field of injury and sports/orthopedic biomechanics. I have served in the tenure/promotion committee for the last two years. I am confident she meets the requirements of tenure and promotion in my institution.”

Reviewer E: “In terms of her outstanding publications, ASME and ABME are good journals and I think these are impactful papers. I suspect she provided the ASME paper as one of her more impactful papers. It is an evaluation of a sensor system and she has done good work with the paper and provided valuable feedback to the community despite the fact that the sensor system is somewhat deficient, which is something she discusses and is not her fault. ... I suspect she would be competitive for promotion with tenure at ... campus, with whom we are affiliated, or at ..., with whom we are closely affiliated, because of her extensive and quality teaching, her publication output, and her student mentoring.”

Summary of Recommendation:

Professor Esquivel has established herself as a successful and innovative scholar in emerging and highly impactful and practically relevant areas of bioengineering. They also demonstrate an established record of excellence in teaching and service. We are pleased to recommend, with support of the College of Engineering and Computer Science Executive Committee, Amanda Esquivel for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering and Computer Science.



Ghassan Kridli, Interim Dean
College of Engineering and Computer Science



Domenico Grasso, Chancellor
University of Michigan-Dearborn