

## MATERIALS SCIENCE AND ENGINEERING SEMINAR SERIES



Friday 21 2020  
10:10-11:00 am  
113 McBryde Hall

**“Title: Materials in Prosthetic Applications  
Following Upper and Lower Limb  
Amputation”**

**Prof. Kristin Carnahan  
Northwestern University Feinberg  
School of Medicine**

**Host: Dr. Abby Whittington**



### ***Abstract***

Abstract: The process of creating a prosthesis for a person who has had a major limb amputation involves shape transfer, application of biomechanical principles, and material selection. Capturing the shape of a residual limb is foundational to the shape transfer process, and this can be accomplished through a variety of techniques. Similarly, the transfer of the initial residual limb shape to ultimately achieve the shape a prosthetic socket can also be approached in many ways. This lecture will discuss the process of socket design as well as the many materials utilized in each aspect of that process: impression or shape capture, test fitting, and definitive socket fabrication. Within this scope, material properties which should be considered for each aspect of prosthesis design will also be discussed.

### ***Bio-sketch***

Kristin Carnahan currently serves as an Instructor in the Masters in Prosthetics and Orthotics program within the Northwestern University Feinberg School of Medicine. Her primary teaching responsibilities are in the clinical practicum courses for Upper Limb Prosthetics and Lower Limb Prosthetics Distal to the Knee. She also assists in teaching Lower Limb Prosthetics Proximal to the Knee. She completed her training at the Georgia Institute of Technology in Atlanta, Georgia, graduating with an MS in Prosthetics and Orthotics in 2008, followed by Orthotics Residency at The University of Michigan O&P Center in Ann Arbor, Michigan, and Prosthetics Residency at ProCare Prosthetics & Orthotics in Buford, Georgia. She is a Certified Prosthetist and Orthotist (CPO) and a Fellow of the American Academy of Orthotists and Prosthetists. She joined the faculty at Northwestern after practicing at ProCare as a staff CPO for 8 years with a primary focus on lower limb prosthetic care. Her research involvement as a certified clinician at Northwestern primarily involves assisting with studies evaluating prosthetic alignment and impression techniques, and she is also working on a study investigating alignment of Ankle Foot Orthoses for adults with hemiplegia.