



College of Engineering

Engineering Faculty Document

No.: 63-26

November 14, 2025

**TO:** The Engineering Faculty

**FROM:** The Faculty of the Weldon School of Biomedical Engineering

**RE:** Adding Learning Outcomes to BME

The faculty of the Weldon School of Biomedical Engineering has approved the following learning outcomes for graduate courses listed below. This action is now submitted to the Engineering Faculty with a recommendation for Fast Track approval.

**BME 55100-Tissue Engineering Learning Outcomes**

1. Define the various classes of tissues and differentiate them based upon their structure and function at multiple size scales
2. Identify and describe the fundamental behaviors of cells. Perform calculations and interpret experimental data related to these fundamental cellular activities
3. Compare and contrast in detail the processes of tissue repair and regeneration. Be able to describe contemporary tissue engineering approaches targeted at accelerating or improving these processes
4. Compare and contrast the underlying mechanisms of the major cellular signaling modalities and provide specific examples of each.
5. Be able to apply fundamental quantitative relationships relevant to mass transfer and biomechanics to tissue engineering design problems
6. Describe and apply the engineering design process to develop a tissue engineering strategy targeted at the restoration or replacement of a dysfunctional tissue or organ

**BME 58300-Biomaterials**

- A working knowledge of characterization techniques
- A basic understanding of polymers and vast array of properties these materials may exhibit
- A basic knowledge of metals and ceramics implanted into the body
- An understanding of thrombosis and the clotting cascade
- A working knowledge of complement
- An understanding of the foreign body response

**RATIONALE:**

The Registrar is requesting we submit learning outcomes for courses that were approved prior to requiring learning outcomes. We are adding them in at this time.

Signed by:

*Kevin Otto*

Kevin Otto, Ph.D.

Dane A. Miller Head and Professor  
Weldon School of Biomedical Engineering

Link to Curriculog entry:

[BME 55100: Tissue Engineering](#)

[BME 58300: Biomaterials](#)