

Biomedical Engineering Focus Areas: Resources Used

*Olivia Olshevski, *Rosalyn Abbott*

What do biomedical engineers do? BME Focus Areas [Slide 4]

Image Citations

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Definition & Scope: Biomechanics [Slide 6]

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@Carnegie Mellon and Olivia Olshevski Note: "This educational resource was developed as a project by Carnegie Mellon student, Olivia Olshevski, MS Biomedical Engineering, 2021 for the course Directed Study, taught by Dr. Conrad Zapanta and co-advised by Dr. Judith Hallinen during the fall of 2021. Some slides were created by Dr. Rosalyn Abbott for the course *Introduction to Biomedical Engineering* at Carnegie Mellon University.

Citations links active as of December 2021.

Applications: Biomechanics [Slide 7]*Image Citations*

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CMU Connection: Natural Environment Biomechanics (Musculoskeletal Biomechanics lab) [Slide 10]

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Definition & Scope: Biomaterials and Tissue Engineering [Slide 12]

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Applications: Biomaterials and Tissue Engineering [Slide 13]

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Example 1: Adipose Microenvironments [Slide 14]

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Example 2: Wound-Healing Biomaterials [Slide 15]

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CMU Connection: Regenerative Biomaterials and Therapeutics Group [Slide 16]

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Applications: Biomedical Devices [Slide 19]

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Example 2: Lab On a Chip (BioMEMS) [Slide 21]

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Definition & Scope: Bioimaging and Signal Processing [Slide 24]

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Applications: Bioimaging and Signal Processing [Slide 25]

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Example 1: Simultaneous BOLD-fMRI and FDG-PET [Slide 26]

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Example 2: ECG Signals [Slide 27]

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CMU Connection: mRNA Drug Delivery [Slide 34]

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Definition & Scope: Neuroengineering [Slide 36]

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Example 1: Retinal Prostheses [Slide 38]*Content Citations*

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Example 2: Cochlear Implants [Slide 39]*Content & Image Citations*

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CMU Connection: Non-Invasive Mind-Control of Robotic Limbs [Slide 40]

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Looking Forward: Unanswered Questions in BME [Slide 42]

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You may like more than one of these focus areas...and that’s okay! [Slide 43]

Image Citation

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