Michigan State University
Department of Mechanical Engineering

BIOMEDICAL CONCENTRATION
(16 Credits)

A mechanical engineering degree with the biomedical concentration prepares students for both traditional mechanical engineering as well as biomedical engineering. Engineers trained in biomedical engineering find work designing, for example, prosthetics, artificial joints, automotive safety equipment, robotics for telemedicine, heart valves, left ventricle assist devices, and the whole range of medical devices. Research by biomedical engineers includes studying the strength of bones and soft tissues, the motion of cells, the kinematics of human motion, and the flow of blood.

To complete a Bachelor of Science degree in mechanical engineering with a biomedical concentration, students must complete the requirements for the B.S. degree, including the following:

• PSL 250 Introductory Physiology–4 credits (Fall and Spring)
• BS 161 Cells and Molecules–3 credits (Fall, Spring and Summer)

Plus 9 credits from the following list:

• ME 494 Biofluid Mechanics & Heat Transfer 3 credits (Fall Only)
• ME 495 Tissue Mechanics 3 credits (Spring Only)
• ME 497* Biomechanical Design\(^1\) 3 credits (Spring Only)
• BE 444 Biosensors for Medical Diagnostics\(^2\) 3 credits (Spring Only)
• ECE 445 Biomedical Instrumentation 3 credits (Fall of Even Years Only)
• MSE 425 Biomaterials & Biocompatibility\(^3\) 3 credits (Fall Only)

CREDIT DISTRIBUTION: PSL 250 will be applied to the Bioscience requirement, and BS 161 will be applied to Other Electives. The nine engineering credits will be applied to the Senior Elective requirement (including the “design intensive” course component if ME 497 is taken). Completion of the concentration will be noted on the final transcript.

\(^1\)Design Intensive. Note: The asterisk (*) signifies that the course is design intensive.
\(^2\)The prerequisites for this course are (BS 161), (CEM 141 or 151) and (ECE 345).
\(^3\)PSL 250 is Recommended Background for this course.