program and its documentation are handed over to students in another class, such as an art class or Engineering Design and Analysis (EDA), for user testing and feedback.

Unit 3: Computer-Assisted Physical Therapy Tools (Analyzing Video) engages students in engineering design to develop a real-time feedback tool for physical therapy patients performing rehabilitation exercises outside of the clinical setting. After analyzing user needs and creating a functional model for the system, students design and build a basic wearable device that allows a web camera to capture information about a joint's range of motion. Students write programs that analyze large quantities of video data, apply an algorithm for calculating changing joint angles, provide real-time user feedback, and export data to a file for later analysis by the patient's physical therapist. The challenge ends with students developing recommendations for future improvements to their systems.

Unit 4: Mechatronic Assistive Devices (Building and Coding) engages students in building and programming mechatronic devices that incorporate Raspberry Pis (credit-card-sized, pocket-sized computers) with structural elements, sensors, motors, lights, and other physical components. Students build and program scale models of assistive devices (e.g., an automated "lazy Susan" to assist people with disabilities, a solar tracking device to maximize efficiency of solar panels, an automated "smart lighting" control system). Once each device is working, students use engineering concept generation and selection techniques to create

practice, members of which have worked together to develop and enhance “grading keys" (e.g., sample student responses, grading guidelines) that enable teachers to check for evidence of student understanding of important concepts and learning objectives. Most of these assessments are formative in nature, enabling teachers to adjust instruction and reinforce learning.

2. Project rubrics. While sample project rubrics are provided as a reference for teachers, the actual project rubrics used in each class are created with students at a strategic point in each unit, usually immediately before teams begin to generate design concepts. (The timing of the rubric development is intended to maximize students’ opportunities to construct their own understanding early in the process while also ensuring that teams generate ideas with the full knowledge of how their designs will be judged.) With ample support from the curriculum, teachers guide their students in breaking each project into subcategories (e.g., physical device, system description, final program, formal report) and identifying essential components of each subcategory that should be evaluated. The teacher then defines the criteria for obtaining points for each component. This process increases student engagement, buy-in, and ownership of their learning, while also allowing the teacher to