A Physics of Semiconductors Concept Inventory

EMANUELA ENE, Oklahoma State University, BRUCE J. ACKERSON COLLABORATION\textsuperscript{1}, ALAN CHEVILLE COLLABORATION\textsuperscript{2} — Following the trend in science and engineering education generated by the visible impact that the Force Concept Inventory (FCI) has created, a Physics of Semiconductors Concept Inventory (PSCI) has been developed. Whereas most classroom tests measure \textit{how many} facts students can remember, or if they \textit{can manipulate} equations, PSCI measures \textit{how well} students interpret concepts and \textit{how well} they can infer new knowledge from already learned knowledge. Operationalized in accordance with the revised Bloom’s taxonomy, the multiple-choice items of the PSCI address the “understand”, “apply”, “analyze” and “evaluate” levels of cognition. Once standardized, PSCI may be used as a predictor for students’ academic performance in the field of semiconductors and as an assessment instrument for instructional strategies.

\textsuperscript{1}Department of Physics; Oklahoma State University; bruce.ackerson@okstate.edu
\textsuperscript{2}NSF and Oklahoma State University; rchevill@nsf.gov