

Semi-Flipped Learning Modules with Educational Design Patterns in Interdisciplinary Brain-Inspired Computing Class

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A new multi-disciplinary Brain-Inspired Computing course is developed for students majoring in Computer, Electrical and Micro- Systems Engineering. This interdisciplinary course entails short learning modules from Neurophysiology, Machine Learning, VLSI Design, and Computer Architecture and serves as an ideal candidate for a Semi-Flipped learning model. Such student-centric learning model enabled active student participation, enhanced critical-thinking development, and improved learning outcomes. For the first time, educational design patterns were also introduced in a multi-disciplinary engineering curriculum to enable expert domain knowledge models. This paper presents the motivation and methodology for these models along with the software video-based learning modules developed.