Educational Research

CURRICULUM DEVELOPMENT IN SYSTEMS FOR SMART COMMUNICATIONS

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Smart communications techonology has seen increased interest in a variety of applications such as digital antenna beamforming (so-called smart antennas), low-orbiting satellite communication systems, intelligent transportation systems, and wireless local area networks. The current research in this area encompasses many aspects of antenna and receiver design, design of antenna control circuits, high-speed data conversion (digital to analog and analog to digital) and digital signal processing. From the large body of current research in this area, the principal investigators will develop a series of educational concept modules covering basic and advanced topics in smart communications technology that overlap not only the principal investigators' research areas but also the "best practices" in the field. These smart communications concept modules will be highly portable and suitable for use in small, medium and large college and university electrical engineering programs. The principal investigators will collaborate on this project with faculty from a large research university and a small college with an engineering program to ensure the portability of the concept modules. Project assessment practices will be utilized from the outset of module development to evaluate the efficacy of the learning principles embodied in the modules. The project assessment will be coordinated with the Villanova Institute for Teaching and Learning.