TSC Category	Design and Architecture				
TSC Title	Embedded Systems Integration				
TSC Description	Implement control systems to perform pre-defined tasks and also real-time monitoring for the real world				
TSC Proficiency Description	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
			ICT-SYS-3001-1.1-1	ICT-SYS-4001-1.1	ICT-SYS-5001-1.1	
			Model, operate and integrate a variety of sensors and actuators for real world applications	Design and develop embedded system processes for the interfacing of embedded systems to the real world	Lead the evaluation of the performance of embedded systems against specified requirements and user expectations	
Knowledge			• Underlying concepts pertaining to performance specification and analysis • Implementation of component interconnections and signal conditioning concepts • Applications of analogue sensors and transducers • Applications of the digital transducers • Actuator networks	• Definition of embedded systems • Requirements, specifications and challenges involved in designing embedded systems • Product design, development cycle and management • Building blocks of an embedded system • Real-world interfacing • Considerations and constraints of systems development process	• Embedded systems requirements • Embedded systems user expectations and/or needs • Software metrics to be evaluated	

Abilities			• Execute performance specification and analysis of sensors and actuators for real life applications • Utilise commonly adopted component interconnections and signal conditioning principles in automation • Apply analogue sensors and transducers to solve real world control problems • Apply digital transducers to solve real world control problems • Develop actuator networks with stepper and continuous drive actuators	• Design and develop processes of embedded systems • Interface and implement embedded systems to the real world • Implement exception and interrupt handling • Implement user acceptance testing (UAT) environments for product testing	• Analyse the main characteristic roles of a processor in the embedded systems design • Appraise the qualifying factors of processors performance and key features of high level language (HLL) in embedded system development • Examine the architecture and operating principles of data structures in embedded systems programming • Evaluate real-time operating system (RTOS) functions and task scheduling models in embedded systems against user expectations and/or needs • Propose improvements to the embedded systems	
Range of Application						