

# Emerging Trends in Software Engineering Education

Emanuel S. Grant, Ph.D.  
Department of Computer Science  
University of North Dakota  
North Dakota, USA  
[emanuel.grant@engr.und.edu](mailto:emanuel.grant@engr.und.edu)

**Abstract:** Program code production is the most evident phase of most software development systems, to the customers of these projects. The development teams are aware that the production of code is the last, and probably the easiest phase of the of the development cycle. Previously, program code development dominated the software development effort, but this dominance has shifted to the earlier phases of the software development life-cycle. Greater effort is now focused on requirements capture and analysis, and system design, with aspects of the program code development being fully automated. This shift in emphasis, from program code development, to application problem understanding and application system design needs to be more evident in the corresponding software engineering education programs. Software engineering students must be exposed to a wider spectrum of software system engineering activities that includes an understanding of the intended systems operational environments, formal system design verification and validation, cyber-security in design, software system development guidelines for domain-specific applications, and social implications of software systems in new application areas. This work looks at some of the emerging trends being introduced and adapted in tertiary-level education that is intended to reduce the knowledge gap between the classroom and the industrial workplace.