University of Essex

Online

Module code	SSD_PCOM7E	NQF level	7
Credit value	10	Study duration	6 weeks

Secure Software Development

Module description

This module introduces students to the underpinning concepts and skills of Secure Software Development. This includes a review of traditional and contemporary Software Development LifeCycle (SDLC) models, focusing in particular on the areas most affected by secure coding considerations. The course will provide students with a combination of an understanding of security principles together with exposure to automated testing tools. Students will be introduced to the techniques in an engaging format, using a mixture of practical exercises, group work and individual activities.

This module aims to:

- Provide students with:
  - an understanding of the principles of secure development methodologies
  - an understanding of the principles of architecture, as well as traditional and contemporary Software Development Life Cycle (SDLC) models, such as TOGAF and Agile
  - an efficient ability to undertake analysis, programming design, software construction and testing required for software development
  - the ability to integrate the approaches: conflicts and compromises
  - the opportunity to reflect on and evaluate their personal development

Learning outcomes

On completion of this module, students will be able to:

- identify and manage security risks as part of a software development project
- critically analyse development problems and determine appropriate methodologies, tools and techniques(including program design and development) to solve them
- design and develop/adapt computer programs and to produce a solution that meets the design brief and critically evaluate solutions that are produced
- systematically develop and implement the skills required to be effective member of a development team in a virtual professional environment, adopting real-life perspectives on team roles and organisation

Syllabus

- Introduction: abstraction in programming, issues and challenges in the Software Development Life Cycle (SDLC); Secure languages and design; Modern development models
- Secure coding principles and practices and the API generation
- Static and dynamic code checking

Learning and teaching methods

The module will be delivered through the provision of specified reading materials on the virtual learning platform, which shall be supported by specified online discussion forums and lecturecasts. The flexible and participative approach of the module will develop a collaborative research inquiry in the advancement of computing, enabling them to accelerate in their chosen career.

Students will demonstrate their ability and strengths through evidence and reflections by maintaining an e-portfolio. The e-portfolio will also act as a means for assessment on evidence of personal growth and CPD.

Synchronous sessions will give students the opportunity to interact with fellow students and for tutor contact. The sessions will include live coding sessions to help students contextualise their knowledge. These synchronous sessions will be recorded in order to ensure that all students can access the material in their own time.

At pre-arranged days and agreed times during the module (usually weekly, prior to a synchronous session), the module tutor will be available for a drop in telephone or preparatory learning liaison session. This is to give students the opportunity to ask specific and general questions relating to the week's learning opportunities and enable them to contextualise their learning.

For team activities in this module, students will be grouped according to time zones to ensure team members can communicate easily with each other. Details on the process for team activities and peer assessment will be made available to students at the outset of the module.

Description of unit of assessment	Length/Duration	Submission date	Weighting
Development team project: design document	1 page (600 words equivalent)	Unit 3	30%
Development team project: coding output as well as evidence of testing	1,000 words equivalent	Unit 6	40%
Individual reflective piece with evidence of individual development tasks	800 words	Unit 6	30%