

Module: Software Testing 261

Module name:	Software Testing 261
Code:	SWT261
NQF level:	6
Type:	Fundamental – Diploma in Information Technology (Software Development Stream)
Contact time:	24 hours
Structured time:	4 hours
Self-directed time:	12 hours
Notional hours:	40 hours
Credits:	4
Prerequisites:	PRG261

Purpose

The main focus of this course is on realistic, pragmatic steps for rigorous and organized software testing. It clarifies testing terminology and covers the different types of testing performed at each phase of the software lifecycle together with the issues involved in these types of testing. The course will discuss how tests can be derived from requirements and specifications, design artefacts, or the source code, and introduce proper testing tools. At the end of the course, students will have an appreciation of a range of testing techniques, and an understanding of rigorous testing theory. They will be able to select an appropriate testing strategy, devise suitable test cases, and formulate correctness hypotheses.

Outcomes

Upon successful completion of this module, the student will be able to demonstrate:

- Detailed knowledge of the main areas of software testing, including an understanding of and the ability to apply the key terms, concepts, standards, principles and theories of software testing to new but relevant contexts
- Knowledge of specific testing levels and testing techniques and how that knowledge relates to other stages of the software development lifecycle.
- The ability to evaluate, select and apply appropriate testing models, processes and practices, and strategies in the context of the software development lifecycle, for both complete lifecycles and individual phases of the lifecycle
- The ability to evaluate different sources of information, to select information appropriate to the task and to design specific and measurable test cases to ensure coverage and traceability to requirements
- The ability to present and communicate complex information regarding testing results and project status reliably and coherently using appropriate professional problem reporting techniques, metrics, and testing status reports to colleagues, managers, and end users by producing appropriate documentation for managing each stage of the testing process

Assessment

Assessment is performed using a variety of instruments:

- Continuous evaluation of theoretical work through written assignments, formative tests, and a summative test.
- Continuous evaluation through tracking of progress, offering support, guidance and provision of constant stream of opportunities to prove mastery of subject material and pursuing more challenging work as they master the basics.
- Final assessment through an examination.

Teaching and Learning

Learning materials

Prescribed books (EBSCO)

- 📖 **Rex Black et al. (2017) Agile Testing Foundations : An ISTQB Foundation Level Agile Tester Guide. Swindon, UK: BCS, The Chartered Institute for IT.**
- 📖 **Hass, A. M. J. (2014) Guide to Advanced Software Testing. Boston: Artech House.**
- 📖 **Rex Black (2011) Pragmatic Software Testing : Becoming an Effective and Efficient Test Professional. Chichester: Wiley.**
- 📖 **Kshirasagar Naik and Priyadarshi Tripathy (2008) Software Testing and Quality Assurance : Theory and Practice. Hoboken, N.J.: Wiley-Spektrum.**

Learning activities

Learning will be facilitated by the lecturer with student centred activities that involve problem-based learning where pupils are presented with challenges that replicate the situation in the real-world environment. This will be achieved through a combination between presentation of theoretical concepts, guided exercises, group work and discussions during the module.

Notional learning hours

Contact	Distance	Other	Type of learning activities	% Learning
y	y	n	Lectures (face-to-face, limited interaction or technologically mediated)	40%
y	y	n	Tutorials: individual groups	20%
n	y	n	Syndicate groups	10%
n	y	n	Independent self-study of standard texts and references (study guides, books, journal articles)	10%
n	y	n	Independent self-study of specially prepared materials (case studies, multi-media, etc.	20%

Syllabus

- Fundamentals of testing and the test process
- Testing in the Software Life Cycle: the general V-Model, and test levels, including: unit testing; integration testing; system testing; acceptance testing; performance, stress, and configuration testing;
- Test management, including: test planning, organisation and strategy, test progress monitoring and control, test reporting