

## Module 28 Software Development Project

<b>Module title</b>	Software Development Project
<b>Module NFQ level (only if an NFQ level can be demonstrated)</b>	8
<b>Module number/reference</b>	BSCH-SDP
<b>Parent programme(s)</b>	Bachelor of Science (Honours) in Computing Science
<b>Stage of parent programme</b>	Award stage
<b>Semester (semester1/semester2 if applicable)</b>	Semester 1 & 2
<b>Module credit units (FET/HET/ECTS)</b>	ECTS
<b>Module credit number of units</b>	15
<b>List the teaching and learning modes</b>	Direct, Blended
<b>Entry requirements (statement of knowledge, skill and competence)</b>	Learners must have achieved programme entry requirements.
<b>Pre-requisite module titles</b>	BSCH-SD1, BSCH-SD2
<b>Co-requisite module titles</b>	None
<b>Is this a capstone module? (Yes or No)</b>	Yes
<b>Specification of the qualifications (academic, pedagogical and professional/occupational) and experience required of staff (staff includes workplace personnel who are responsible for learners such as apprentices, trainees and learners in clinical placements)</b>	Qualified to as least a Bachelor of Science (Honours) level in Computer Science or equivalent and with a Certificate in Training and Education (30 ECTS at level 9 on the NFQ) or equivalent.
<b>Maximum number of learners per centre (or instance of the module)</b>	60
<b>Duration of the module</b>	Two Academic Semesters, 24 weeks teaching
<b>Average (over the duration of the module) of the contact hours per week</b>	.5
<b>Module-specific physical resources and support required per centre (or instance of the module)</b>	One class room with capacity for 60 learners along with one computer lab with capacity for 25 learners for each group of 25 learners

Analysis of required learning effort		
	Minimum ratio teacher / learner	Hours
<b>Effort while in contact with staff</b>		
Classroom and demonstrations	1:60	12
Monitoring and small-group teaching		
Other (specify)		
<b>Independent Learning</b>		
Directed e-learning		
Independent Learning		363
Other hours (worksheets and assignments)		
Work-based learning – learning effort		
<b>Total Effort</b>		375

Allocation of marks (within the module)					
	Continuous assessment	Supervised project	Proctored practical examination	Proctored written examination	Total
<b>Percentage contribution</b>		100%			100%

### Module aims and objectives

In the project module the learners complete a large piece of work, encompassing both research and development. They get the opportunity to work closely with a member of the lecturing staff. They are required to produce complete a software application and to document the process.

They not only learn new technical skills but also learn how to conduct valid academic research and to develop a software product to industry standards.

Teaching in this module is conducted mainly through one-on-one meetings between the learner and the supervisor. However, in the early stages of the process the faculty organises a number of relevant seminars. Topics for these could include: Writing a project proposal, referencing, report writing, research skills, and online resources.

The skills that the learners develop in the project module benefit them in all areas of their chosen careers, either in the computing industry or if pursuing further studies.

### **Minimum intended module learning outcomes**

On successful completion of this module, the learner will be able to:

1. Draw on the reflective insights and skills imparted by the programme to carry out a systematic piece of research and development
2. Integrate the learning on the programme in an effective way by undertaking a project of professional and institutional relevance
3. Use technical design and implementation skills
4. Reason in a consistent and methodological manner at an abstract level
5. Research, analyse and draw conclusions in a systematic manner
6. Write coherently and present information in a systematic manner to the required academic level
7. Utilise research methodologies and presentation skills
8. Undertake a technical project and bring it to completion
9. Document, at a level befitting a professional, the complete project life-cycle from requirements acquisition to product testing

Apply their learning as skilled reflective practitioner of Computing Science

### **Rationale for inclusion of the module in the programme and its contribution to the overall MIPLOs**

The module is the capstone element of the Bachelor of Science (Honours) in Computing Science degree. It accumulates the skill and knowledge that the learner has developed over the previous four years and combines that with a degree of independent learning to enable learners to specify, design, and build a system that accurately reflects a level 8 standard of work. The electives that have been chosen by each learner for their 4<sup>th</sup> year should influence the focus of the project they propose.

Appendix 1 of the programme document maps MIPLOs to the modules through which they are delivered.

### **Information provided to learners about the module**

Learners receive a programme handbook to include module descriptor, module learning outcomes (MIMLO), class plan, assignment briefs, assessment strategy, and reading materials.

## **Module content, organisation and structure**

### **Project Timeline**

The project begins in semester one. A series of six two-hour seminars are held over the first six weeks of semester 1, where the process and project skills are discussed. The learners are then given another two weeks to develop a project proposal and submit it to the faculty for approval. The faculty will review and approve the proposal, and then assign a supervisor to the learner before the end of the 1<sup>st</sup> semester. The learners then have 18 weeks to bring the project to completion.

### **Project Proposal**

Each learner must complete a project proposal for validation by a panel of project supervisors. Once approved, the learner may commence their project work. The project proposal must be completed under the guidance of the Software Development Project manager.

### **Project Supervision**

Each learner is assigned an academic project supervisor who is responsible for giving individual guidance and direction for the duration of the project. It is the responsibility of each learner to:

1. agree a work schedule with their supervisor
2. meet deadlines agreed in the work schedule
3. execute the research, design and implementation in accordance with professional academic standards
4. provide deliverables on time and in the correct format

### **Format of Proposal**

All proposals submitted should be no more than 2000 words describing what is intended to be done and offer a review of current research in the area together with a literature review. A project proposal should be more than just a documented idea. Learners must demonstrate that they have carried out some outline research on their proposal and have considered the appropriateness, technical complexity, feasibility, and scope of their proposed project. This work should be completed under the guidance of the supervisor.

### **Format of Initial Specification**

After a supervisor has been assigned the learner will update their original proposal document with the agreed project specification. The report should be no more than 2000 words accurately describing what the project will focus on and what platform / technologies are being used in this project. The report should also include a projected timeline of work to be completed.

### **Format of Interim Review**

At the midway point, the learner will give a 5 minute presentation on the current status of the project. The presentation will be in the form of a 8 -10 slide PowerPoint file. This presentation should focus on the following element; the current status of the project with respect to features implemented (3-6 slides), most challenging feature so far (1-2 slides), updated scope and timeline (2 slides).

### **Module teaching and learning (including formative assessment) strategy**

The module is taught as a combination of seminars sessions and one-to-one meetings with the project supervisor assigned to each learner. The seminar sessions discuss and explain to learners the principles and challenges involved in correctly research and developing a project proposal at a level 8 standard.

Assessment is split into 6 elements.

- Proposal (5%)
- Initial Specification (5%)
- Interim Review (10%)
- Final Demonstration (30%)
- Project Documentation (30%)
- Project Process (20%)

### **Timetabling, learner effort and credit**

The module is timetabled as six 2-hour seminars and a series of meeting with project supervisor.

The number of 15 ECTS credits assigned to this module is our assessment of the amount of learner effort required.

There are 12 contact hours made up of six lectures delivered over 6 weeks with classes taking place in a classroom. There are also 14 – 18 project meetings to occur over 18 weeks taking place in the faculty's project room. Each meeting will be 30 minutes in duration. The learner will need 363 hours of independent effort to further develop the project that is proposed.

The team believes that 375 hours of learner effort are required by learners to achieve the MIMLOs and justify the award of 15 ECTS credits at this stage of the programme.

### **Work-based learning and practice-placement**

There is no work based learning or practice placement involved in the module.

## **E-learning**

The college VLE is used to disseminate notes, advice, and online resources to support the learners. The learners are also given access to Lynda.com as a resource for reference.

## **Module physical resource requirements**

Requirements are for a classroom for 60 learners equipped with a projector, and a work area / project lab to hold regular meetings.

## **Reading lists and other information resources**

### **Recommended Text**

Dawson, C. W. (2015) *Projects in Computing and Information Systems: a Student's Guide*. Harlow, England: Addison-Wesley.

### **Secondary Reading**

Berndtsson, M. (2008) *Thesis projects: a Guide for Students in Computer Science and Information Systems*. London: Springer.

Cornford, T. and Smithson, S. (2006) *Project Research in Information Systems: a Student's Guide*. Basingstoke: Macmillan.

Carey, M. (2014) *Developing Quality Technical Information: A Handbook for Writers and Editors* Upper Saddle River: IBM Press

Phillips, J. (2010) *IT Project Management: On Track from Start to Finish*. New York: McGraw-Hill

## **Specifications for module staffing requirements**

For each instance of the module, one lecturer qualified to at least Bachelor of Science (Honours) in Computer Science or equivalent, and with a Certificate in Training and Education (30 ECTS at level 9 on the NFQ) or equivalent.. Industry experience would be a benefit but is not a requirement.

Learners also benefit from the support of the programme director, programme administrator, learner representative and the Student Union and Counselling Service.

## **Module Assessment Strategy**

The assignments constitute the overall grade achieved, and are based on each individual learner's work. The continuous assessments provide for ongoing feedback to the learner and relates to the module curriculum.

<b>No.</b>	<b>Description</b>	<b>MIMLOs</b>	<b>Weighting</b>
1	Project Proposal; the learner submits a document that will define the focus the area and theme of the learner's project.	1,2,4,6,7,9	5%
2	Initial Specification document; once assigned a supervisor the learner will refine the initial proposal document.	1,2,4,6,7,9	5%
3	Interim Review; learner gives a 5-minute presentation on the work done so far and what the timeline is for the remainder of the project.	1,2,4,6,7,9	10%
4	Project Demonstration; Learner presents project for review and code inspection.	1-10	30%
5	Project Documentation; Learner submits a comprehensive document that outlines the research taken for this project, and documents the implementation and testing process.	1,2,4,6,7,9	30%
6	Project Process Report; the Supervisor's report on the professionalism and work ethic of the Learner throughout the project process.	1-10	20%

All repeat work is capped at 40%.

### **Sample assessment materials**

Note: All assignment briefs are subject to change in order to maintain current content.