

Module 23 Group Project

Module title	Group Project
Module NFQ level (only if an NFQ level can be demonstrated)	7
Module number/reference	BSCO-GP
Parent programme(s)	Bachelor of Science in Computing Science
Stage of parent programme	Award stage
Semester (semester1/semester2 if applicable)	Semester 2
Module credit units (FET/HET/ECTS)	ECTS
Module credit number of units	10
List the teaching and learning modes	Direct, Blended
Entry requirements (statement of knowledge, skill and competence)	Learners must have achieved programme entry requirements.
Pre-requisite module titles	All previous modules
Co-requisite module titles	None
Is this a capstone module? (Yes or No)	Yes
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)	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.
Maximum number of learners per centre (or instance of the module)	60
Duration of the module	One Academic Semester, 12 weeks teaching
Average (over the duration of the module) of the contact hours per week	3
Module-specific physical resources and support required per centre (or instance of the module)	One classroom with capacity at least 60 and one computer lab with capacity for 25

Analysis of required learning effort		
	Minimum ratio teacher / learner	Hours
Effort while in contact with staff		
Classroom and demonstrations	1:60	18
Monitoring and small-group teaching	1:25	18
Other (specify)		
Independent Learning		
Directed e-learning		
Independent Learning		214
Other hours (worksheets and assignments)		
Work-based learning – learning effort		
Total Effort		250

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

Module aims and objectives

The aim of this module is to get the learners to complete a large piece of group work encompassing both research and development. They are required to produce a complete software application, e.g. in the area of an Internet of Things (IoT) application. They are also required to demonstrate and to document the process.

The objectives of this module are to have learners apply what they have learned on the programme and carry out a piece of development from scratch. They will need to propose a full project using the chosen technology/IoT and are expected to go through the phases of research, design, implementation, and analysis of the completed work. They are also expected to demonstrate their work to a group of demonstrators.

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. Work and communicate effectively with a group of their peers as part of the development process.

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

This module enables learners to interact with and take advantage of IoT hardware such as Raspberry Pi/Aurduino. Learners are not only expected to research and develop for a new platform that involves interacting with sensors and other related hardware components, but to take full control of the software development process from start to finish using the skills they learned in the previous modules that involved software development projects.

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

Overview and introduction:

- Introduction to the group project
- The timeline of the project
- Stages involved and expectations on the group

Introduction and advice about the chosen technology/IoT

- Introduction to the technology/IoT
- Capabilities and functionality of the chosen technology/IoT
- Mechanisms by which it can be programmed/interacted with
- What the platform is capable/incapable of doing
- Common pitfalls with technology/IoT

The demonstration and submission process

- Required documentation and submission process

- The demonstration process

Module teaching and learning (including formative assessment) strategy

The module is taught as a combination of lecture and lab sessions. The lecture sessions discuss and explain to learners the chosen technology/IoT and the challenges involved in building applications for said platform.

Assessment is the production of a group based project.

The overall project process looks like the following:

1. Learners are expected to form groups of a maximum of three learners
2. The groups are then expected to submit a proposal to the faculty for their project. The faculty will judge if it is of the right standard and if necessary adjust the proposal to bring the proposal up or down to the necessary standard.
3. The groups work on their project until the given deadline. They are expected to research, design, implement, and document their projects
4. Project demonstrations will take place where each group presents its work to a group of demonstrators for assessment.

Proposals:

Project proposals should be no more than 1000 words describing what is intended to be done. A project proposal should be more than 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.

Assessment:

The project will be evaluated on its quality of thought, interpretation, implementation, and the insight gained by the learners. The ability of the group to think and reason with the project and technology/IoT will be taken into account when grading the finished work. The ability of the group to present and defend the material is also of significant importance. The marks for the project are apportioned as follows:

Process (20%)

The project is a work in progress and should be conducted in a professional manner. This means that the group should set goals and deadlines based on a project plan. Marks will be awarded for meeting these goals and deadlines.

Product (40%)

The goal is to deliver a project that meets requirements laid out in the project specification. Each group will be required to demonstrate their project to a group of examiners and defend the work they have completed. The faculty examiners will then agree a mark based on the product produced.

Project Report (40%)

The report will describe the research, design, and implementation of the project. Guidelines on report writing will be provided during the project process. The project report will consist of 4,000 to 6,000 words.

Timetabling, learner effort and credit

The module is timetabled as one 1.5 hour lecture and one 1.5 hour lab per week.

Continuous assessment spreads the learner effort to focus on the project for the entire module.

There are 36 contact hours made up of 12 lectures delivered over 12 weeks with classes taking place in a classroom. There are also 12 lab sessions delivered over 12 weeks taking place in a fully equipped computer lab. The learner will need 214 hours of independent effort to further develop the skills and knowledge gained through the contact hours. This time is also needed for the learner to work with their group to research, design, implement, and document the project.

The team believes that 250 hours of learner effort are required by learners to achieve the MIMLOs and justify the award of 10 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 25 seater computer lab for practical sessions with access to the chosen technology/IoT.

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.

Lynda: *Online Courses, Classes, Training, Tutorials* (no date) Lynda.com - from LinkedIn. Available at: <https://www.lynda.com/>³

Carey, M. (2014) *Developing Quality Technical Information*. Upper Saddle River: IBM Press.

Phillips, J. and Ward, J. A. (2010) *IT project management on track from start to finish*. New York: McGraw-Hill Companies. Available at: <http://www.books24x7.com/marc.asp?bookid=40088> ⁴

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.

³ Last accessed 26/07/2018

⁴ Last accessed 26/07/2018

No.	Description	MIMLOs	Weighting
1	The learner's engagement with the process is assessed, based on evidence of group work and individual input to the group.	8, 9	20%
2	Once completed the group will present their project as a demo to a group of examiners and answer questions, both individually and as a group.	2, 3, 7	40%
3	The project report must describe the research, design, and implementation of the project. Guidelines on report writing are provided during the project process. The project report must consist of 4,000 to 6,000 words.	1, 4, 5, 6, 7	40%

All repeat work is capped at 40%.

Sample assessment materials

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

Group Project Proposal

For the group project you are required to build an Internet of Things (IoT) style project around the Raspberry Pi platform. Your project is expected to sense information about its current environment. With this information it is required to analyse it algorithmically and then make decisions about changes to make in the current environment that will be effected through actuators attached to the Raspberry Pi.

Your proposal must consist of the following 3 things:

- A detailed description of what your project will sense, analyse, and change in its environment.
- A Bill Of Materials (BOM) that consists of all required components, their prices, and also where they can be sourced.
- A rough timeline/Gantt chart of the project.

This is to be submitted by the group before an agreed deadline. These proposals will then be reviewed by the faculty and assessed on the following criteria

- The complexity of the project: This is to determine if it meets the required standard. If not you will be asked to either incorporate more elements or remove some components if there is too much listed there. Suggestions will be made as part of this feedback
- The feasibility of the project: i.e. is it doable within the time. If not we may ask you to consider doing something else or reduce the complexity.
- The cost of materials: Are the required components all at a reasonable cost. If not we may suggest alternatives or require you to find cheaper alternatives.

Once the project has been accepted you can start work on it immediately while the faculty will endeavour to get your components as fast as possible.