

Full Title	Engineering Software Systems (Apprenticeship)		
Status	Uploaded to Banner	Start Term	2017
NFQ Level	07	ECTS Credits	05
Module Code	MECH07041	Duration	Stage - (26 Weeks)
Grading Mode		Department	Mechanical & Industrial Eng
Module Author	Patrick Delassus		
Co Authors	Paul ODowd		

Module Description

This module delivers the essentials of spreadsheet and database technology appropriate to the needs of the engineer in employment in manufacturing or related industry.

Learning Outcomes

On completion of this module the learner will/should be able to:

1. List the theory underpinning event-based computer programming;
2. List the theory underpinning the database concept and database technology;
3. Design an effective event-based software application incorporating spreadsheets and database elements to address basic engineering and production requirements
4. Construct the designed software application using a commercial application development environment;
5. Test and debug the constructed application;
6. Demonstrate, install and manage the tested application.

Indicative Syllabus

SPREADSHEET BASICS: Creating spreadsheet documents using commercial software. Entering and Editing data. Performing calculations with formulae and functions.

DATABASE BASICS: Relational databases. Use of commercial software to create a single table database; Creating the primary key and foreign key. Selecting, Moving, Sorting, Deleting, and importing data, Printing reports.

Developing a multi-table database; Linking tables in relationships; cardinality; Working with controls on forms and reports. Enforcing integrity. Securing a database. Introduction to Normalisation.

APPLICATIONS PROGRAMMING: Events; Responding to events. Event type programming environments such as Visual Basic for Applications; Using VBA to manipulate an Excel spreadsheet; Adding Functionality using VBA. Macros. Forms; Controls; The Graphical or Windows Environment. I/O. Data Types. Variables. Constants. Operators; Mathematical Operators and Mathematical Operator Precedence. Logical Operators. Inserting Comments. Functions. Procedures. Subroutines.

INTEGRATED APPLICATIONS: Creating applications incorporating integrated spreadsheets and databases to solve engineering problems and production problems: capacity, scheduling etc

USER INTERFACE DESIGN AND SYSTEM INTEGRATION: Consideration of user interface design for applications. Human Computer Interaction Commissioning the application. Securing the application. Managing the application.

Teaching and Learning Strategy

During GMIT block, this module will delivered through the development of a software application from design to implementation. In addition during the industry block, the student will also receive support from the lecturer to consolidate his software skills .

Assessment Strategy

Engineering Software Systems is a "Type 2" apprenticeship module. It is 75% assessed during the Academic Block. Another 25% of the marks are for work done in the Industry Block. This Industry Block assessment may be integrated with the Operations Management Industry Block assessment, or with the Technical Project, if appropriate.

The assessment strategy of this module will be a combination of:

- Lab assessments such as tutorial sheets or online quizzes,
- Industry project

The lab assessments will represent 80% of the module. They will then have an industry project for 20% to recognise the transfer of acquisition of competences to the workplace.

Repeat Assessment Strategies

Students will be given the opportunity to take a repeat examination.

Indicative Coursework and Continuous Assessment:		100 %		
Form	Title	Percent	Week (Indicative)	Learning Outcomes
Assessment	Lab Sessions	20 %	OnGoing	1,2
Practical Evaluation	Final Lab Test	60 %	End of Semester	1,2,3,4,5,6
Project	Industry project	20 %	OnGoing	3,4,5,6

Full Time Delivery Mode Average Weekly Workload:			3.05 Hours		
Type	Description	Location	Hours	Frequency	Weekly Avg
Practical	Lab Session	Computer Laboratory	3	Weekly	3.00
Supervision	Industry project support	Not Specified	0.05	Weekly	0.05

Part Time Delivery Mode Average Weekly Workload:			1.50 Hours		
Type	Description	Location	Hours	Frequency	Weekly Avg
Practical	Practical	Computer Laboratory	1.5	Weekly	1.50

Recommended Reading Book List

Sommerville, I., (2015). *Software Engineering (10th Edition)*. Pearson.
ISBN 0133943038 ISBN-13 9780133943030

Programme Membership

GA_EMAJG_B07 201900 Bachelor of Engineering in Manufacturing Engineering (Apprenticeship)
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