Programme Module for

Database Methods

leading to

NFQ Level 5 QQI Award

Database Methods 5N0783

Introduction
This programme module may be delivered as a standalone module leading to certification in a QQI minor award. It may also be delivered as part of an overall validated programme leading to a Level 5 QQI Certificate.

The teacher/tutor should familiarise themselves with the information contained in the Dublin and Dun Laoghaire ETB programme descriptor for the relevant validated programme prior to delivering this programme module.

The programme module is structured as follows:

1. Title of Programme Module
2. QQI Component Title and Code
3. Duration in hours
4. Credit Value of QQI Component
5. Status
6. Special Requirements
7. Aim of the Programme Module
8. Objectives of the Programme Module
9. Learning Outcomes
10. Indicative Content

11. Assessment
    a. Assessment Technique(s)
    b. Mapping of Learning Outcomes to Assessment Technique(s)
    c. Guidelines for Assessment Activities

12. Grading
13. Learner Marking Sheet(s), including Assessment Criteria

Integrated Delivery and Assessment
The teacher/tutor is encouraged to integrate the delivery of content where an overlap between content of this programme module and one or more other programme modules is identified. This programme module will facilitate the learner to develop the academic and vocational language, literacy and numeracy skills relevant to the themes and content of the module.

Likewise the teacher/tutor is encouraged to integrate assessment where there is an opportunity to facilitate a learner to produce one piece of assessment evidence which demonstrates the learning outcomes from more than one programme module. The integration of the delivery and assessment of level 5 Communications and level 5 Mathematics modules with that of other level 5 modules is specifically encouraged, as appropriate.

Indicative Content
The indicative content in Section 10 does not cover all teaching possibilities. The teacher/tutor is encouraged to be creative in devising and implementing other approaches, as appropriate. The use of examples is there to provide suggestions. The teacher/tutor is free to use other examples, as appropriate. The indicative content ensures all learning outcomes are addressed but it may not

follow the same sequence as that in which the learning outcomes are listed in Section 9. It is the teacher's/tutor's responsibility to ensure that all learning outcomes are included in the delivery of this programme module.

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1. Title of Programme Module
Database Methods

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2. Component Name and Code
Database Methods5N0783

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3. Duration in Hours
150 Hours (typical learner effort, to include both directed and self directed learning)

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4. Credit Value
15 Credits

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5. Status
This programme module may be compulsory or optional within the context of the validated programme. Please refer to the relevant programme descriptor, Section 9 Programme Structure

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6. Special Requirements
None

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7. Aim of the Programme Module
This program module aims to equip the learner with the knowledge, skill and competence to create and modify databases under limited supervision.

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8. Objectives of the Programme Module

- To facilitate the learner to develop an understanding of databases and their range of applications

- To facilitate the learner to develop the skills to create databases from design specifications

- To enable the learner utilise a wide range of database functions in order to manipulate, retrieve and output information

- To assist the learner to develop skills to design and implement a database

- To enable the learner to create a database according to a given brief, under time constraint

- To assist the learner to develop the academic and vocational language, literacy and numeracy skills related to Database Methods through the medium of the indicative content

- To enable the learner to take responsibility for his/her own learning.

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9. **Learning Outcomes of Level** Database Methods5N0783
Learners will be able to:

1. Outline a range of typical uses for databases

2. Describe essential database concepts including database files, tables, records, fields, queries and reports

3. Explain the purpose of query views such as design, datasheet, structured query language (SQL), pivot table, and pivot chart

4. Open an existing database and perform routine operations including accessing records, entering and editing data, adding new records, searching, sorting, and managing fields

5. Retrieve selected data from the table(s) in a database by designing and building simple queries which can be stored for re-use

6. Construct a form to facilitate data entry into a database

7. Create reports which can be used to present selected information from a database in a format suitable for e-mailing or printing

8. Import data from external data sources such as text files, spreadsheets or existing database files

9. Develop a database design including tables, keys, table relationships to meet a given design brief

10. Create a database which includes tables, queries, forms and reports based on a given design brief

11. Improve personal performance by using additional resources such as the help facility to solve familiar and unfamiliar database problems.

10. Indicative Content
This section provides suggestions for programme content but is not intended to be prescriptive. The programme module can be delivered through classroom based learning activities, group discussions, one-to-one tutorials, field trips, case studies, role play and other suitable activities, as appropriate.

1. Outline a range of typical uses for databases

    Facilitate the learner to explore typical uses for databases, for example

    *   Databases are used frequently by everyone – telephone directory, schools, colleges, clubs, hospitals, etc.
    *   Databases are used to store related data in a structured format
    *   Businesses use the information generated by databases in decision-making
    *   Mail merge uses data stored in a database to produce customised letters for customers – useful for marketing, promoting products/services

2. Describe essential database concepts including database files, tables, records, fields, queries and reports

    Facilitate the learner to develop a knowledge of important concepts that may include:

    *   data
    *   information
    *   database file
    *   objects in a database – table, form, query, report
    *   table – grid, store of data
    *   record - a row in the table
    *   field- a column heading in the table
    *   Identify component parts of a record structure – field name, data type, size/format
    *   Identify the various data types - text, number, currency, etc.
    *   form – facilitates data entry
    *   query – used for selecting records to meet specific criteria
    *   report – presentation of output, summations

3. Explain the purpose of query views such as design, datasheet, structured query language (SQL), pivot table, and pivot chart

Facilitate the learner to develop an awareness of query views that may include:

- Datasheet view – displays records in the dynaset
- Design view – used to create the query using the QBE grid
- SQL view – can be used to create and edit the query using SQL
- Pivot table – view that summarizes and analyses data in a datasheet
- Pivot chart – view that shows a graphical analysis of data in a datasheet

4. Open an existing database and perform routine operations including accessing records, entering and editing data, adding new records, searching, sorting, and managing fields

Facilitate the learner to develop his/her competence in creating and modifying databases that may include:

- Access a database system
- Open an existing database
- Create a record structure from a given specification
- Identify role of primary key
- Identify suitable fields for use as a primary key
- Enter data
- Edit data
- Add new records
- Delete individual records
- Add new fields to a record structure
- Save modified database
- Sort on a single field
- Sort (using index) on more than one field
- Search by filtering
- Print the table

5. Retrieve selected data from the table(s) in a database by designing and building simple queries which can be stored for re-use

Facilitate the learner to interrogate the database that may include:

- Create a query on a single field

- Create a query on multiple fields

- Create a query involving logical operators AND, OR, NOT

- Create a query to select records containing a particular character string within a character field

- Create a multi-table query

- Save query

- Print output from the query

6. Construct a form to facilitate data entry into a database

   Facilitate the learner to create a data entry form that may include:

   - Create a form to enter data

   - Distinguish and move between form view, layout view, design view

   - Move labels and fields around the form to achieve the desired appearance

   - Place a label on a form

   - Change font size, style, colour

   - Place a graphic on a form

   - Adjust text box size appropriately

   - Use a form to find, edit and delete records

   - Change the tab order of a form

   - Add a new field to an existing form

7. Create reports which can be used to present selected information from a database in a format suitable for e-mailing or printing

   Facilitate the learner to generate reports that may include:

   - Create a report from a table

   - Create a report from a query

   - Sort data on a particular field

   - Group data on a particular field

   - Move between print preview, layout view, report view, design view

   - Modify report layout by moving fields as appropriate

   - Insert appropriate headings

   - Insert graphics

- Perform calculations such as sum or average on a field
- Display the number of records in a group/report
- Modify report header, report footer, page header, page footer, group header, group footer

8. Import data from external data sources such as text files, spreadsheets or existing database files

   Facilitate the learner to:

   - Import data from other files into a new table
   - Append data from other files into an existing table

9. Develop a database design including tables, keys, table relationships to meet a given design brief

   Facilitate the learner to:

   - Study the existing system
   - Define problems and constraints in the current system
   - Analyse the information needs that the database will meet
   - Define the design objectives of the database
   - Identify the objects that will be created
   - Design record structures
   - Decide on key field in each table and outline relationships between tables
   - Specify the fields to be used in each form, query and report
   - Specify headings, calculations, etc. in each report

10. Create a database which includes tables, queries, forms and reports based on a given design brief

    Facilitate the learner to develop his/her competence in creating a database that may include:

    - Create appropriate record structures from a design
    - Set primary key for each table
    - Create relationships between tables as appropriate

- Create forms

- Enter data as appropriate

- Create relevant queries

- Create relevant reports

- Create a set of labels

- Print entire database

11. Improve personal performance by using additional resources such as the help facility to solve familiar and unfamiliar database problems

Facilitate the learner to explore options to improve performance that may include:

- Use of the help facility provided by Access

- Creating a simple front-end for the database

- Creating a combo box based on particular field

- Creating a Lookup wizard

- Use of memo facility

11. Assessment

11a.   Assessment Techniques
Project   50%
Examination – Practical 50%

11b.   Mapping of Learning Outcomes to Assessment Techniques
In order to ensure that the learner is facilitated to demonstrate the achievement of all learning outcomes from the component specification; each learning outcome is mapped to an assessment technique(s). This mapping should not restrict an assessor from taking an integrated approach to assessment.

Learning Outcome	Assessment Technique
1. Outline a range of typical uses for databases	**Project**
2. Describe essential database concepts including database files, tables, records, fields, queries and reports	**Project**
3. Explain the purpose of query views such as design, datasheet, structured query language (SQL), pivot table, and pivot chart	**Project**
4. Open an existing database and perform routine operations including accessing records, entering and editing data, adding new records, searching, sorting, and managing fields	**Exam**
5. Retrieve selected data from the table(s) in a database by designing and building simple queries which can be stored for re-use	**Exam**
6. Construct a form to facilitate data entry into a database	**Exam**
7. Create reports which can be used to present selected information from a database in a format suitable for e-mailing or printing	**Exam**
8. Import data from external data sources such as text files, spreadsheets or existing database files	**Exam**
9. Develop a database design including tables, keys, table relationships to meet a given design brief	**Project/Examination**
10. Create a database which includes tables, queries, forms and reports based on a given design brief	**Project**
11. Improve personal performance by using additional resources such as the help facility to solve familiar and unfamiliar database problems	**Project**

11c.   Guidelines for Assessment Activities

The assessor is required to devise an assessment brief and marking scheme for the project and an assessment brief, marking scheme, and outline solutions for the practical examination paper. In devising the assessment briefs/examination papers, care should be taken to ensure that the learner is given the opportunity to show evidence of achievement of ALL the learning outcomes. Assessment briefs may be designed to allow the learner to make use of a wide range of media in presenting assessment evidence, as appropriate. Quality assured procedures must be in place to ensure the reliability of learner evidence.

Project	50%

The project may be carried out over a period of not less than three weeks during the delivery of the programme module

The project brief will focus on a broad range of specific learning outcomes and will require candidates to:

- demonstrate a knowledge of the uses of databases and an understanding of basic database concepts
- an awareness of the purpose of a various query views
- design and create a database
- demonstrate how performance was improved by the use of additional resources

The project brief will give the candidate the opportunity to outline typical uses for databases. They will also discuss concepts such as database files, tables, records, fields, queries, the purpose of various query views and reports.

Candidates will be required to develop a design and create a database for a set of requirements. They must produce a project report describing the design of the database and a working implementation.

The database will contain a minimum of two tables, each with a primary key specified. A relationship must exist between the tables. One of the tables must have at least five fields and a minimum of twenty five records. The fields must include a range of data types – text, number, date/time, currency, etc.

Evidence for the design will include:

- analysis of the current system
- clear concise aims for the database

- specification of the record structures to include field names, data types and size/format

- identification of key fields in each table

- description of relationship between tables

- specification of queries to include a list of the fields to be used in each query

- specification of reports to include title, fields to be used, sort, addition of grouping, calculations to be performed

- specification of labels to include multiple fields

- design of data entry form

Evidence of implementation will include:

- a database structure

- a minimum of two tables

- relationship between tables

- data entry form

- queries as identified in the design

- reports as specified in the design

- a set of labels

- printout of each table, query and report

- printout of a set of labels

- screen shots of record structure, relationship window and data entry form

The learner will also discuss how personal performance was improved by the use of additional resources to solve familiar and unfamiliar database problems.

Evidence for this assessment may take the form written, oral, graphic, audio, visual or any combination of these. Any audio, video or digital evidence must be provided in a suitable format.

All instructions for the learner should be clearly outlined in an assessment brief.

Examination - Practical	50%
The practical examination will take two hours	

The learner will demonstrate his/her competence in a practical examination that assesses the candidate's mastery of database skills demonstrated in a set period of time under restricted conditions.

The assessor will design a series of tasks that will require the candidate to:

- Open an existing database and perform routine operations including accessing records, entering and editing data, adding new records, searching, sorting, and managing fields
- Retrieve selected data from the table(s) in a database by designing and building queries which can be stored for re-use
- Construct a form to facilitate data entry into a database
- Create reports which can be used to present selected information from a database in a format suitable for e-mailing or printing
- Import data from external data sources such as text files, spreadsheets or existing database files

12. Grading

Distinction: 80% - 100%
Merit: 65% - 79%
Pass: 50% - 64%
Unsuccessful: 0% - 49%

At levels 4, 5 and 6 major and minor awards will be graded. The grade achieved for the major award will be determined by the grades achieved in the minor awards.

DATABASE METHODS 5N0783	Learner Marking Sheet Project 50%

Learner's Name: _____

Assessment Criteria	Maximum Mark	Learner Mark
Discussion of use of databases and database concepts and the purpose of query views	5	
Design • Analysis of the current system • Aim of database clearly described • Specification of record structure • Key fields identified and relationship described • Specification of appropriate queries • Specification of appropriate reports • Specification of labels • Design of data entry screen	20	
Implementation • Record structures with appropriate primary key created and screen shots produced • Relationship between tables established and screen shot produced • Data entry form created and screen shot produced • Data accurately entered into tables • Effective queries created • Reports with headings and calculations attractively produced • Labels with multiple fields accurately produced • Printout of each table, query, report and labels	20	
Discussion of improving personal performance by using additional resources such as the help facility to solve familiar and unfamiliar database problems	5	
Total Mark	50	

Assessor's Signature: _____   Date: _____

External Authenticator's Signature: _____   Date: _____

DATABASE METHODS 5N0783	Learner Marking Sheet Examination (Practical) 50%

Learner's Name: _____

Assessment Criteria	Maximum Mark	Learner Mark
• Open an existing database and perform routine operations including accessing records, entering and editing data, adding new records, searching, sorting, and managing fields	**10**	
• Retrieve selected data from the table(s) in a database by designing and building simple queries which can be stored for re-use	**10**	
• Construct a form to facilitate data entry into a database	**10**	
• Create reports which can be used to present selected information from a database in a format suitable for e-mailing or printing	**10**	
• Import data from external sources such as text files, spreadsheets or existing database files	**10**	
Total Mark	**50**	

Assessor's Signature: _____   Date: _____

External Authenticator's Signature: _____   Date: _____