

Government of the people's Republic of Bangladesh Affiliated

University of International Computer Administration Foundation Bangladesh



SYLLABUS FOR THE SHORT COURSE

ON

CERTIFICATE IN DATABASE PROGRAMMING

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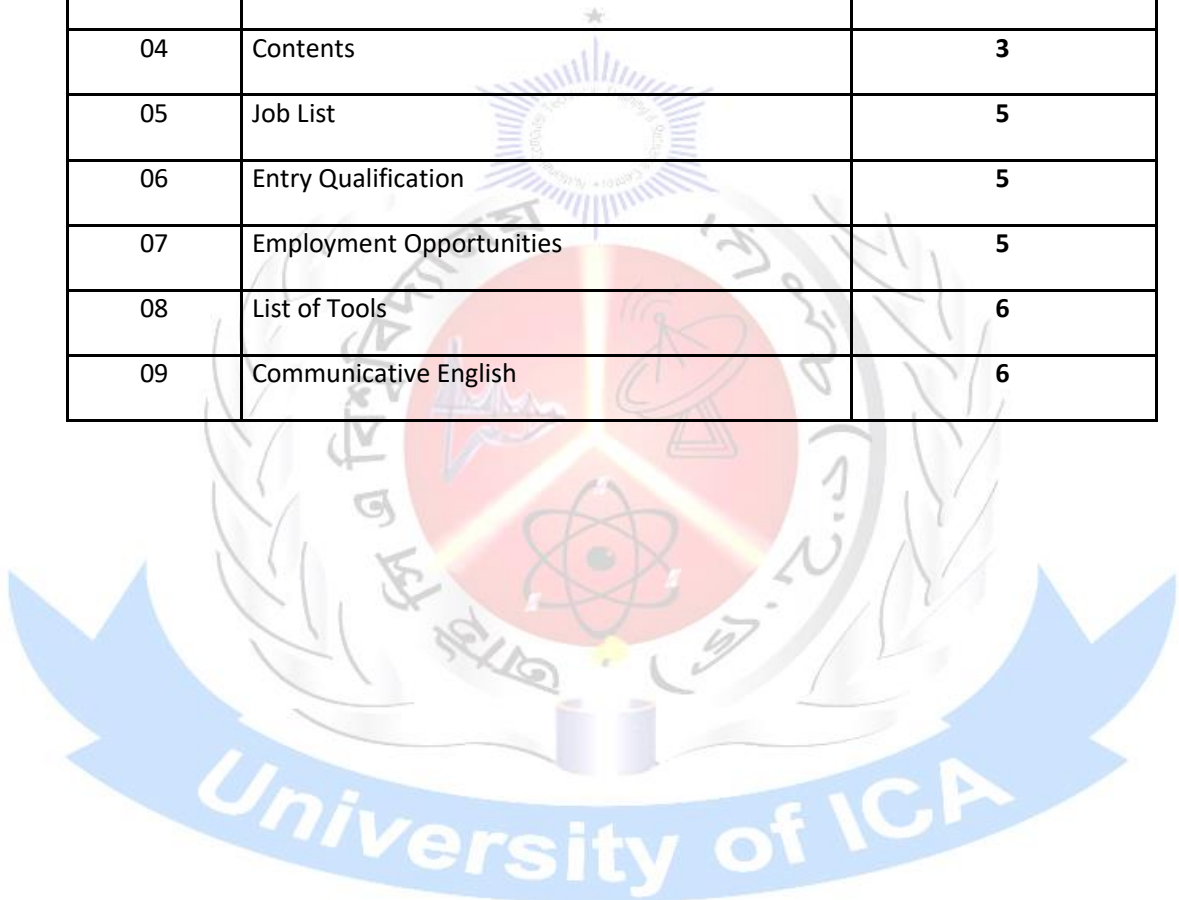
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Total Duration: 360 Hours
Or 6 Month

Course Title: Database Programming

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COURSE TITLE: CERTIFICATE IN DATABASE PROGRAMMING

INTRODUCTION:

Computer Short Course training on **Certificate in Database Programming** provides a solid foundation in the basic and intermediate skills for working with Relational Database Management System (RDBMS), MS SQL Server and Database Connectivity with Visual Basic.NET. This course is ready to extend the knowledge into some of the more specialized and advanced capabilities of software development.

In this regard BTEB has approved a short course on Certificate in Database Programming. The syllabus is prepared as per present need in the job markets.

OBJECTIVES:

1. To be able to understand the basic knowledge and skills on Database.
2. To provide basic knowledge and skills on Database Programming.
3. To Develop skills on various Databases connectivity.
4. To Develop/Customize Database software.

COURSE OUTLINE:

Name of Course	Duration of Course		Entry Qualification
Database Programming	Total 360 hrs	5 days per week, Per day 3 hrs	Minimum S.S.C Pass.
	Theory= 100 hrs PRACTICAL= 200 hrs.	Theory = 1 hr, per lesson Practice = 2 hrs. per practice	
	Communicative English= 60 hrs	Total = 3 hrs, per working day	

CONTENTS

S/L	Topic	Theory	Practical	Total
01.	Introduction to Database Systems. Characteristics, advantages and implications of the database approach to information systems as contrasted with traditional integrated file systems. DBMS architecture. History of database systems. Roles involved with database systems.	10		10
02.	Database Concepts and Architecture. The database system environment including data models, schemas, database languages and interfaces. Three-schema architecture and data independence. Classifications of database systems.	10		10
03.	Data Modeling using Entity Relationship Diagrams. Information analysis to identify query keys, candidate keys, entities, attributes, relationships and integrity constraints. ER modeling as a means of representing information concepts. Extended entity relationship modeling as it relates to specialization, generalization and inheritance.	3	12	15
04	The Relational Data Model. Relational model concepts. Referential integrity, entity integrity, and other constraints. Defining a relational schema from an ER diagram.	3	12	15
05.	The Relational Algebra. Definition and use of relational algebra operations to query a relational database.	3	12	15
06.	SQL The Relational Database Standard. Use of SQL to define a relational data model. Basic and complex queries in SQL. Insert, delete and update statements in SQL. Defining and using Views in SQL. Implement security with Grant/Revoke.	3	12	15
07.	Normalization as a Process for Verification of Data Model Design. Definition of functional dependency, full functional dependency, transitive dependency and multi-valued dependency. Definition of the normal forms from un-normalized through 4th normal form and how to apply the normalization process to recognize normal forms. How to move a data model to a higher normal form and the issues of de-normalization as it applies to retrieval performance	3	12	15

08.	Practical Experience with a Relational DBMS Providing SQL. In-depth introduction to an existing DBMS package that implements the relational approach using SQL, such as ORACLE or MS SQL Server. Students acting as DBA's will create a data model using the SQL language. Using SQL students will Insert, Update and Delete data values from the database. Students will then implement complex queries to retrieve data from the database.		15	15
09.	SQL Interaction with Programming Interfaces. Methods for extending database functionality to programming languages such as COBOL or Java. Description of pre-compilers, dynamic SQL, ODBC, and JDBC. Students will gain introductory experience with a programmatic interface to insert, update, delete and query data in a database.	3	12	15
10.	Desktop Database Packages. Presentation of a desktop database package as an implementation of a relational DBMS such as MS Access. Students will construct a data model and database using the package. Students will then implement queries using the IDE of the package.	3	12	15
11.	Introduction to Two-Tier and Three-Tier Architectures, and the Internet Database Environment: Introduction to the Internet database environment, including Web-enabled databases, Web-enabled system design, and programming in two-tier and three-tier architectures. It also discusses XML and data exchange on the Internet.	6	9	15
12.	Introduction to Data Warehousing: Introduction to the fundamental concepts of data warehousing. The data warehouse architectures and OLAP tools are explained.	15		15
13.	Data Quality and Database Administration: Devoted to data quality, data integration, and database administration. The roles of data administration and database administration, their function, and their importance to an information resource will be discussed.	3	12	15
14.	Overview of Object-Oriented Databases:	6	9	15

	Introduces the object-oriented data model, and discusses the implementation of object persistence using relational databases.			
15.	Practical Project Develop a Relational Database model for the following -A typical Library Management System. -A standard POS (Point of Sales) system -Student enrolment System -A simple Inventory Management System		100	100
	Total	71	229	300

JOB LIST:

1. Student Record keeping system Database Project
2. Library Management System Database Project
3. Salary Management System Database Project
4. Inventory Control management Database Project
5. Ticket Reservation System Database Project

ENTRY QUALIFICATION: Minimum Class Eight Pass.

EMPLOYMENT OPPORTUNITIES:

1. Government Services
2. Semi Government Services
3. Corporation
4. Private Sectors
5. NGO's
6. Abroad
7. Self-Employment

LIST OF TOOLS (MINIMUM REQUIREMENT):

SL.	REQUIRED SOFTWARE, TOOLS AND EQUIPMENTS	QUANTITY
1	Personal Computer	21
2	Server PC	01
3	Scanner	01
4	Printer	01
5	Projector (Optional)	01
6	UPS/IPS/Uninterrupted Power Source	For 21PCs
7	Internet Modem/Router	01
8	Switch (Minimum 24 Port)	01
9	DVD Writer	01
10	USB Pen Drive	01
11	Operating System Software (Latest & Updated Version)	02
12	Antivirus Software (Latest & Updated Version)	01/PC
13	Broadband/Wireless Internet Connection	For 21PCs
14	First Aid Kit	01

B) COMMUNICATIVE ENGLISH

Related Subject-10 hours and General Subject- 20 hours. 1 hour/period

On the completion of this course trainees will be able to:

1. Speak in English with confidence
2. Communicate with target persons effectively.
3. Understand the speech of English users.
4. Achieve better professional performance.

CONVERSATIONAL SITUATION. PART - I	
Topics	Hours
1. Receive and Respond, Participate and Lead to workplace communication:	1
a) <i>Explain & follow routinely speaking & messages in a workplace.</i>	1

b) <i>Follow routinely speaking & message.</i>	1
c) <i>Perform work duties following written notices.</i>	1
	1
2. Work with others, Team Environment and Lead small Teams:	1
a) <i>Develop effective workplace relationship.</i>	
b) <i>Contribute to work group activities.</i>	1
	1
3. Demonstrate work values, Practice career professionalism and Develop & Practice	1
Negotiation skills	1
a) <i>Define the purpose of works.</i>	1
b) <i>Apply work values/ethics.</i>	1
c) <i>Deal with ethical problems.</i>	1
d) <i>Maintain integrity of conduct in the workplace.</i>	1
	1
4. Practice housekeeping procedures, Occupational health and safety procedure and	1
Solve problems related to work Activities:	1
a) <i>Sort and remove unnecessary items.</i>	1
b) <i>Arrange items.</i>	1
c) <i>Maintain work areas, Tools and Equipments.</i>	1
d) <i>Follow standardizes work process and procedures.</i>	1
e) <i>Perform work spontaneously.</i>	1
f) <i>Use Mathematical Concepts & Techniques and Use Relevant Technologies.</i>	1
	1
5. Personal Manner:	1
a) <i>Show good Manner.</i>	1
b) <i>Respect honorable person (Sir, Senior, Trainees).</i>	1
c) <i>Cooperate & Thinking to each and other about PRACTICAL works.</i>	
d) <i>Maintain sequence in PRACTICAL works.</i>	
e) <i>Own Responsibility & Duties of PRACTICAL works.</i>	
f) <i>Observation of all PRACTICAL works.</i>	

PRACTICAL	
Tasks	Hour
6. Interpret the meaning of given words (by the teachers) - Vocabulary. 7. Speaking on a specific Situation. 8. Public speaking. 9. Exchanging views with target persons. 10. Introducing one self. 11. Describing & narrating events, places, objects etc.	3

CONVERSATIONAL SITUATION. PART - II	
Topics	Hours
11.1 Speaking English – Getting Information & Finding one’s way	1
11.2 Speaking English – About Tools and Equipments	1
11.3 Speaking English – About meeting someone & participating in class.	1
11.4 Speaking English – Daily Activities & Asking About Activities	1
11.5 Speaking English – Evening Activities and about theoretical contents.	1
11.6 Speaking English – Meeting at the Train station & Asking Question at the Train station.	1
11.7 Speaking English – Meeting at the Airport & Getting information at the Airport’s	1
11.8 Speaking English – About different type of Measuring Tools and Cutting Tools	1
11.9 Speaking English – Getting to the Hotel & Asking direction.	1
11.10 Speaking English – Asking about Buses & Traveling by bus.	1
11.11 Speaking English - About PRACTICAL Class.	1
11.12 Speaking English – Going by Taxi and asking the time.	1
11.13 Speaking English – Arriving early or late and Time and the calendar.	1
11.14 Speaking English – Living in an Apartment.	1
11.15 Speaking English – Using the Telephone.	1
11.16 Speaking English – Getting help in stores and talking about shopping.	1
11.17 Speaking English – Sending and Receiving Letters.	1

11.18	Speaking English – Talking about the Weather & Trips and sightseeing.	1
11.19	Speaking English – Talking about Eating & Dinner Conversation.	1
11.20	Speaking English – About Machines and Materials.	1
11.21	Speaking English – Common Health problem and Quitting & Finding Jobs.	1
11.22	Speaking English – Office Details and Office Conversation.	1
11.23	Speaking English – About PRACTICAL Job.	1
11.24	Speaking English – On a specific situation & Public speaking.	1
11.25	Speaking English – About Exchanging view with a Person & introducing oneself.	1
11.26	Speaking English – Describing and Narrating events, place, Objects etc.	1
11.27	Speaking English – About different type of computer, operating system and operating software, add remove software, DBM, Email and internet.	1
PRACTICAL		
Tasks		Hour
11.28	Speaking on a specific Situation.	3
11.29	Public Speaking.	
11.30	Exchanging views with target persons.	
11.31	Introducing one self.	
11.32	Describing & Narrating events, places, objects etc.	
11.33	Producing the meaning of given words (by the teachers)-Vocabulary.	
11.34	Prepared speech.	

The End