BANGLADESH TECHNICAL EDUCATION BOARD

Agargaon, Dhaka-1207

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

SYLLABUS (PROBIDHAN-2016)

COMPUTER TECHNOLOGY

TECHNOLOGY CODE: **666**

5th SEMESTER

DIPLOMA IN ENGINEERING
PROBIDHAN-2016

COMPUTER TECHNOLOGY (666)
5th Semester

Sl. No.	Subject Code	Name of the Subject	T	P	C	Marks				Total
						Theory		Practical		
						Cont. Assess	Final Exam	Cont. Assess	Final Exam	
1	66651	Programming in Java	2	3	3	40	60	25	25	150
2	66652	Surveillance Security System	1	6	3	20	30	50	50	150
3	66653	Sequential Logic System	3	3	4	60	90	25	25	200
4	66654	Web Development Project	0	6	2	-	-	50	50	100
5	66655	PCB Design & Circuit Making	0	6	2	-	-	50	50	100
6	68546	Operating System application	2	3	3	40	60	25	25	150
7	65851	Accounting Theory & Practice	2	3	3	40	60	50	-	150
Total			**10**	**30**	**20**	**200**	**300**	**275**	**225**	**1000**

66651	**Programming in Java**	**T P C**
		2 3 3

OBJECTIVES
- To develop knowledge and skill on programming Basics in Java Language.
- To develop knowledge and skill to create, compile, debug & execute a java program.

SHORT DESCRIPTION
Basics of Java Language, Data Structures in Java, Object Oriented Concepts in Java, Build and Packaging Tools, Threading, Generics, Lambda, Collections, I/O operations, networking in Java, Database communication in Java, RMI package, web server in Java, servlet;

DETAIL DESCRIPTION
Theory:

1. Understand the concept of object oriented programming (OOP)
    1.1 Describe the software evolution.
    1.2 Mention the drawbacks of traditional programming.
    1.3 State the terms used in OOP-objects, classes, data abstraction, encapsulation, inheritance, Polymorphism, message passing, and dynamic binding
    1.4 Mention the list of OOP languages.
    1.5 State the benefits of OOP.
    1.6 Mention the application of OOP.

2. Understand the features of Java
    2.1 Describe the history of Java.
    2.2 Describe Java development environment steps.
    2.3 Mention the applications of Java.
    2.4 Describe programming style and convention of Java.
    2.5 Describe white space, identifiers, literals, comments, separators and keywords of Java.
    2.6 Write the structure of Java Program

3. Understand the use of Data types, Variables, Operators, Control Statements and Array in Java
    3.1 State the data types (primitives, non-primitive and literals) of Java programs.
    3.2 Describe the declaration and dynamic initialization of variables in java.
    3.3 State the process of accepting input from a user and option panes
    3.4 Describe the control flow statements in Java.
    3.5 Describe various types of operators used in Java.
    3.6 Describe Array dimensions, declarations and initializations.
    3.7 Write Java programs using operators, control statements and Arrays.

4. Understand Classes, Objects, Methods, and Constructors in Java
    4.1 Describe the declaration (syntax) of class and object in Java.
    4.2 Define Method with syntax.
    4.3 State the procedure of adding Method to class.
    4.4 Describe the advantages of Method.
    4.5 Describe the overloading Method in java.
    4.6 Describe the constructor and overloading constructor in java.

4.7 Explain the instance variable hiding, and garbage collection.

4.8 Write java programs relating to class, object, method and constructor.

5. Understand the inheritance and polymorphism

5.1 Define super class and sub class.

5.2 Describe the multilevel hierarchy of inheritance.

5.3 Describe the overridden methods in java.

5.4 Describe dynamic run-time polymorphism in java.

5.5 Describe the abstract and object classes in java.

5.6 Mention the uses of *final* and *super* keyword.

5.7 Write java programs relating to inheritance and polymorphism.

6. Understand Packages and Interfaces

6.1 Define the packages with syntax

6.2 Describe the function of packages

6.3 Mention the different levels of class member access.

6.4 Define the interfaces with syntax.

6.5 Describe the implementation of interfaces.

6.6 Explain the nested interfaces.

6.7 Describe the variables in interfaces.

6.8 Write java programs that related to package and interface.

7. Understand multithreaded programming

7.1 Define multithreaded programming with syntax.

7.2 Mention the different between processed-based and thread-based multitasking

7.3 Mention the several methods of thread class with state diagram.

7.4 Describe the way to create the several types of thread.

7.5 Describe the minimum, default and maximum thread priorities.

7.6 Describe the synchronization inter-thread communication method.

7.7 Describe the suspending, resuming and stopping threads.

7.8 Write java programs using multithreaded programming method.

8. Understanding I/O Operations

8.1 Describe the Byte stream and Character Stream Classes.

8.2 Describe the Reading Console Input and Writing Console Output.

8.3 Mention the constructors for creating File objects.

8.4 Describe the Reading and Writing files in java.

8.5 Describe flowchart of a complete java streams.

8.6 Describe the Random Access File Streams.

8.7 Write java programs relating I/O operation.

9. Database Connectivity: JDBC

9.1 Define Java Database Client/Server methodology.

9.2 Describe Two-Tier and Three-Tier Database Design.

9.3 Describe JDBC API(API Components, Applications and Applets)

9.4 Mention security considerations of JDBC.

9.5 Describe JDBC Drivers, JDBC-ODBC Bridge and Current JDBC Drivers.

9.6 Write java programs relating to JDBC.

10. Client-Server Networking in Java.

   10.1 Define network protocol

   10.2 Describe TCP and UDP.

   10.3 Describe Socket Programming and URL Processing.

   10.4 Describe steps occur when establishing a TCP connection between two computers using sockets.

   10.5 Describe Server Socket Class Methods (**java.net.ServerSocket)**

PRACTICAL:

   1 Install a Java Development Kit /Net beans software

   2 Write and execute java program for displaying text messages.

   3 Write and execute java programs using arrays and control flow statements.

   4 Write and execute java programs using class, object, method and constructor.

   5 Compile and run your program using Ant, Maven, Gradle packaging tool in Java.

   6 Write and execute java programs using inheritance and polymorphism.

   7 Write and execute java programs using package.

   8 Write and execute java programs using interface.

   9 Write and execute java programs using multithreaded programming method.

   10   Write and execute java programs using I/O operation.

REFERENCE BOOKS & URL.

1. The Complete Reference of Java- Herbert Schildt

2. JAVA How to Program- P.J. Deitel and H.M. Deitel

3. সান জাভা – ২ জাহিদ খান; মিন্টু লাল সাহা; জয়ন্ত কুমার সাহা; আব্দুল আহাদ মুরাদ

4. জাভা প্রোগ্রামিং – এএনএম বজলুর রহমান রোকন

Related URL links:

http://www.informit.com/library/content.aspx?b=STY_Java2_24hours&seqNum=24

http://java.sun.com/developer/onlineTraining/JavaIntro/contents.htmlinks

http://www.homeandlearn.co.uk/java/java.html

http://java.sun.com/ : Java Development Kit, Development tools, Java Tutorial

http://www.eclipse.org/ : A vendor-neutral open development platform and application frameworks for building software

http://www.uml.org/: UML resources

http://www.bruceeckel.com/ : Free electronic version of the book

http://www.javatpoint.com/java-tutorial