| Course Title               | : | Introduction to Programming     |
|----------------------------|---|---------------------------------|
| Course Code                | : | CDS205/CDS2205                  |
| No of Credits/Term         | : | 3                               |
| Mode of Tuition            | : | Sectional Approach              |
| <b>Class Contact Hours</b> | : | 3 hours per week                |
| Category in Major Prog.    | : | Business Elective/Free Elective |
| Prerequisite               | : | Nil                             |

## **Brief Course Description**

The course assumes no knowledge in computer programming. It introduces the students to the basic concepts and techniques of developing programs for problem solving. Object-oriented programming methodology is used throughout the course to teach the fundamentals of programming. In this course, students learn how to apply an integrated program development tool to design, implement, test, debug, and document programs. It establishes the foundation on which students are able to develop application programs in different high-level programming languages such as Java and C++.

### Aims

This course is aimed at introducing students to the subject of computer programming and enabling them to develop computer programs for problem solving at a basic level.

### Learning Outcomes

On completion of this course, students will be able to:

- 1. Explain the basic concepts of object-oriented programming and structured programming.
- 2. Apply simple programming constructs.
- 3. Use stepwise refinement to solve problems.
- 4. Develop methods.
- 5. Develop, debug and test application programs.

### **Measurement of Learning Outcomes**

- 1. The first learning outcome is measured in tests and the final examination.
- 2. Students are required to develop a number of executable programs to evaluate if they can achieve the second learning outcome.

- 3. Students are expected to apply stepwise refinement methodology to develop programs for a number of problems. The ability of students to apply stepwise refinement methodology is also evaluated in tests and the final examination.
- 4. The programs developed by students must contain a number of methods in order to demonstrate the ability of students to develop methods. Students will be asked to write methods in tests and the final examination.
- 5. The fifth learning outcome is measured in a number of programming assignments.

### **Indicative Content**

#### Fundamentals of Programming

Introduction to a program development tool such as JBuilder or Visual J++.NET Primitive data types Operators, precedence, and associativity Operand evaluation order Control structures Methods

### Basic Concepts of Object-Oriented Programming

Objects Classes Arrays Strings

#### Program Development Process

Introduction to problem solving Program design Using a program development tool to implement programs Program debugging Program testing Program documentation

### **Teaching Method**

Concepts and techniques of application programming are covered in lectures; programming exercises are assigned to students in lab sessions.

#### Assessment

| Class Attendance and Participation | 5%  |
|------------------------------------|-----|
| Class Exercises                    | 15% |
| Assignment                         | 20% |
| Mid-term Examination               | 30% |

| Final Examination | 30%  |
|-------------------|------|
| Total             | 100% |

## **<u>Required/Essential Readings</u>**

Liang, Y. D., Introduction *to Java Programming with JBuilder*, 3<sup>rd</sup> ed., Prentice-Hall, 2003.

# **Recommended/Supplementary Readings**

Arnold, K., Gosling, J., and Holmes, D., *The Java Programming Language*, 3<sup>rd</sup> ed., Addison Wesley, 2000.

Deitel, H. M. and Deitel, P. J., C++: How to Program, 4<sup>th</sup> ed., Prentice-Hall, 2003.

Stroustrup, B., *The C++ Programming Language*. Special ed., Addison-Wesley, 2000.