

Module Code: MATH-405
Module Title: **Fortran Programming**
Module Rating: 3 Cr. Hours

Simple Fortran 90 Programs

- Writing a program
- Input statement
- Some FORTRAN 90 program examples

Numeric Constants and Variables

- Constants
- Scalar variables
- Declaring variable names
- Implicit declaration
- Named constants

Arithmetic Expressions

- Arithmetic operators and modes of expressions
- Integer expressions
- Real expressions
- Procedure of operations in expressions
- Assignment statements
- Defining variables
- Mixed mode expressions
- Intrinsic functions

Conditional Statements

- Relational operators
- The block if construct
- Example programs using if structures

Implementing Loops in Programs

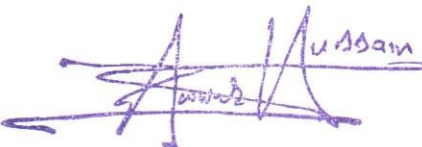
- The block do loop
- Count controlled do loop

Logical Expressions and More Control Statements

- Logical constants, variables and expressions
- Precedence rules for logical operators
- The case statement

Functions and Subroutines

- Function subprograms
- Syntax rules for function subprograms
- Generic functions
- Subroutines


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Defining and Manipulating Arrays

- Arrays variables
- Use of multiple subscripts
- Do type notation for input/output statements
- Initializing arrays
- Use of arrays in do loops
- Whole array operations

Elementary Format Specifications

- Format description for numerical data; read statement
- Format description for print statement
- Multi-record formats
- Printing character strings

Recommended Books

1. Michel Metcalf, John Reid and Malcolm Cohen, *Fortran 95/2003 Explained*, (Oxford University Press, 2004).
2. V. Rajaraman, *Computer Programming in Fortran 90 and 95*, (Prentice Hall of India, New Delhi, 1999).
3. Larry Nyhoff and Sanford Leestma, *Fortran 90 for Engineers and Scientists*, (Prentice Hall, 1997).
4. Stephen J. Chapman, *Introduction to Fortran 90/95*, (Mc Graw-Hill International Edition, 1998).



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