

## **Department of Mathematics and Statistics**

### **MTH409A Computer Programming and Data Structures 2-1-1-0 [9]**

#### **Course objective**

The aim of the course is to develop programming skills using the fundamental and basics of C language. It also describes the uses of pointers, arrays, structures, linked lists etc in a C program.

#### **Course Contents**

- Introduction
- Basic concepts: Machines, Operating systems
- Introduction to C language: Program design, Writing and running a C program
- Data types and variables
- Operators and their precedence
- Flow control: Relational and logical operators, Conditionals statements, Looping statements
- Arrays, pointers and strings
- Functions: Passing data to functions, Passing addresses to functions
- Data structures: Structures and unions, Linked lists, Stacks, Queues, Binary trees
- Input/Output management.

**Instructor:** S Ghorai email: [sghorai@iitk.ac.in](mailto:sghorai@iitk.ac.in)

**Classroom:** L13

**LAB:** CC-02 Linux Lab, 301

**TIME:** Lecture: MT 16:00-17:00 Tutorial:Th 16:00-17:00 Lab: To be confirmed

#### **Course Organization:**

All Notices for the course will be sent by email to the course email [MTH409A@iitk.ac.in](mailto:MTH409A@iitk.ac.in). Laboratory materials will be posted in <http://home.iitk.ac.in/~sghorai/TEACHING/MTH409/lab.html>

**Exams and quizzes:** There will be two quizzes, two lab tests, one mid-semester and an end-semester examinations.

**Grading policy:** Quiz-15%,Lab-15%,Midsem-25%,Endsem-45%

***Appearance in the end-semester examination is mandatory.***

**Attendance:** Attendance will be taken in the lab classes. Students are expected to attend all the lecture and tutorial classes.

#### **References:**

- A Book on C - A Kelley and I Pohl
- Programming in ANSI C - E Balagurusamy
- The C Programming Language - B W Kernighan and D M Ritchie