

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

**Classroom:** FB557

**Lecture:** MT 16:00    **Tutorial:** Th 16:00

#### Course Organization:

All Notices for the course will be sent by email to the course email [MTH409@iitk.ac.in](mailto:MTH409@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