101009/IT100C FUNDAMENTALS OF COMPUTER SCIENCE
Course Contents and Lecture Schedule

No	Topic	No. of Lectures
1	**PROBLEM SOLVING CONCEPTS**	**(8 HOURS)**
1.1	**General problem Solving concepts**: Algorithm, and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loops.	**3 Hours**
1.2	**Imperative languages**: Introduction to imperative language; syntax and constructs of a specific language (ANSI C)	**3 Hours**
1.3	Input andOutput: Standard I/O, Formatted Output – printf, Formated Input – scanf, Variable length argument list.	**2 Hours**
2	**OPERATOR AND EXPRESSIONS**	**(8 HOURS)**
2.1	Types Operator and Expressions with discussion of variable naming and Hungarian Notation: Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations. Control Flow with discussion on structured and unstructured programming: Statements and Blocks	**2 Hours**
2.2	Arithmetic Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operators, Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, proper variable naming and Hungarian Notation.	**2 Hours**
2.3	Control Flow with discussion on structured and unstructured programming: Statements and Blocks, If-Else-If, Switch, Loops – while, do, for, break and continue, gotolabels, structured and un-structured programming	**4 Hours**
3	**FUNCTIONS**	**(6 hours)**
3.1	Functions and Program Structure with discussion on standard library: Basics of functions, parameter passing and returning type,	**2 Hours**
3.2	C main return as integer, External, Auto, Local, Static, Register Variables, Scope Rules, Block structure, Initialisation,	**2 Hours**
3.3	Recursion, Pre processor, Standard Library Functions and return types.	**2 Hours**
4	**POINTERS AND ARRAYS**	**(6 hours)**
4.1	Pointers and Arrays: Pointers and address, Pointers and Function Arguments, Pointers and Arrays, Address Arithmetic, character	**2 Hours**

	Pointers and Functions,	
4.2	Pointer Arrays, Pointer to Pointer, Multi-dimensional array and Row/column major formats, Initialisation of Pointer Arrays,	**2 Hours**
4.3	Command line arguments, Pointer to functions, complicated declarations and how they are evaluated.	**2 Hours**
5	**STRUCTURES AND FILES**	**(8 hours)**
5.1	Structures: Basic Structures, Structures and Functions, Array of structures, Pointer of structures, Self-referral structures, Table look up, typedef, unions, Bit-fields	**4 Hours**
5.2	File access including FILE structure, fopen, stdin, sdtout and stderr, Error Handling including exit, perror and error.h, Line I/O, related miscellaneous functions.	**2 Hours**
5.3	Unix system Interface: File Descriptor, Low level I/O – read and write, open, create, close and unlink, Random access – lseek, Discussions on Listing Directory, Storage allocator	**2 Hours**