**Concepts to Study**

**CSC131 - DIGITAL COMPUTER FUNDAMENTALS AND PROGRAMMING USING C**

**Total Teaching Hours For Semester : 60 Total Teaching Hours For Semester : 4**

**Max Marks : 100 Credits : 04**

**Course Objective**

The course builds the logical thinking in the students with the help of the programming concepts and also gives the practical

exposure to problem solving using the C programming language. It also facilitates the students to study about

algorithms,flowcharts and programs, to solve problems through logical thinking and to learnprogramming using C.

**Learning Outcome**

**Ethical Values:**• Coding standards should be followed while writing C programs.• Proper comments should be given

for the sections of code.

**Unit-1 Teaching Hours:7**

**Introduction to Computers &Number systems**

Differentnumbersystemsandtheirconversions(Decimal,Binary,OctalandHexadecimal) Binaryarithmetic-

Addition,subtraction,multiplicationanddivisionofbinarynumbers,1’sand 2’s complement, Floating point numbers, Coding –

BCD,Gray, ASCII and EBCDIC.

**Unit-2 Teaching Hours:6**

**Boolean Algebra**

Booleanoperationsandexpressions,Lawsandrulesofbooleanalgebra,Demorgan’sTheorem, Boolean expressions,

SimplificationofBoolean expression.

**Unit-3 Teaching Hours:6**

**Logic Gates**

ANDgate,ORgate,NOTgate,NANDgate,NORgate,X-ORgate,X-NORgate,The

universal property ofNAND gate and NOR gate,Karnaughmap (SOP).

**Unit-4 Teaching Hours:5**

**Combinational logic**

Adders(HalfandFull),Decoder,Encoder,Multiplexer,De-

Multiplexer(IntroductoryConcepts Only).

**Unit-5 Teaching Hours:6**

**Flip-flops**

Flip-flops-SRflip-flop,Dflip-flop,JKflip-flop,Positiveedgetriggeredflipflops, Masterslave

JK flip-flop, Introduction to Registers and Counters.

**Unit-6 Teaching Hours:5**

**Introduction to Programming**

TypesofProgramming,Languages,StructuredProgramming,AlgorithmsandFlowcharts

with Examples.**Self Learning**: Introduction to computers- Characteristics of computers, Block diagram of a digital

computer.

**Unit-7 Teaching Hours:7**

**Introduction to C**

Historyof C-Characterset-StructureofaCprogram –Datatypes, constants,variablesand

keywords.Expressions

–Statements–Operators–Arithmetic,Unary,Relationalandlogical,

Assignment,Conditional.Libraryfunctions.DataInputandoutput– Singlecharacterinput,

getchar,getch,–Single characteroutputputchar,

FormattedI/O(scanf,printf),getsandputs function.

**Unit-8 Teaching Hours:8**

**Control Structures and Arrays**

Branching:if,if…else,if…elseladder,switch.Looping:while,do…while,for,nestedcontrol structures, break, continue statement,

goto statement.Arrays:definition,processing,types-OneandTwodimensionalarrays.String,stringoperations

(strlen(),strrev(),strcpy(),strcat(),strcmp()strstr()), arrays ofstrings. **Self Learning**: String Library functions.

**Unit-9 Teaching Hours:5**

**Functions**

Functions: Definition, Accessing and prototyping, types of functions, passing arguments to functions, recursion,

passing arrays to functions.

**Unit-10 Teaching Hours:5**

**Pointers and Structure**

Introduction to Union, Pointers: Fundamentals, Declaration,Operationson

Pointers,Passing pointersto a function. Structures:Definition,Processingastructure.

**Essential Text Books**

[1]Floyd, Thomas L, *Digital Computer Fundamentals*, 10thEdition, Pearson International, 2009.[2]

ByronGottfried,JitenderChhabra,*ProgrammingwithC****,****3rd* Edition,TataMcGraw-Hill,2010.

**Recommended Reading**

[1]Malvino, Paul Albert,Leach, Donald P. GautamSaha, *Digital Principles And Applications*, 7thEdition,TMH,2010.[2]

Bartee,Thomas C,*Digital Computer Fundamentals,* 6thEdition, TMH, 2010.[3] Balagurusamy E, *Programming in ANSI C,*

4thEdition, Tata-McGraw-Hill, 2007.[4] Deitel HM and Deitel P J, *C - How to Program*, 7thEdition, Prentice-Hall, 2012.[5]

Yashavant P. Kanetkar, *Let Us C*, 12thEdition, BPB Publications, 2012. [4].Susant KRout, *Cimple,* Tata-McGraw-Hill

Publishing Company Ltd., 2008.

**Evaluation Pattern**

**Evaluation Pattern: End Semester Exam Pattern:**