Institute of Computer Science/Information Technology (ICS&IT)
Faculty of Management Sciences & Computer Sciences (FMCS)
The University of Agricultural Peshawar

Program:	BS (CS)-V
Course Name:	Compiler Construction
Course Code:	CSC-501
Credit Hours:	03
Total Weeks:	16
Total Hours:	48

Course Objectives

After completing this course the students will be able to understand the basic concepts of compiler constructions, its phases, types and complexity, although few students are likely to build or even maintain a compiler from a major programming language, they can profitably apply the idea and techniques to general software designs. The major topics in complier design are covered in depth in this course.

Week-1

Language Processors, Interpreters, Compiler vs. Interpreters,

Week-2

Language Processing System, the Structure of a Compiler, Compiler Construction Tools,

Week-3

Evolution of Programming Languages, 1st - 5th Generation Languages,

Week-4

Impacts on Compilers, Modeling in Compiler Design, Code Optimization, Programming Language Basics

Week-5

Syntax Directed Translator, Syntax Definition,

Week-6

CFG, Derivations, Context Free Grammar, Types of Derivations, Leftmost Derivation, Rightmost derivation, Derivation Tree

Week-7

Ambiguity, Associativity& Precedence

Week-8

Attributes, Translation Schemes, Postfix Notation, Synthesized Attributes,

Week-9

Tree Traversals, Translation Schemes, Pre-order and Post order Traversals

Week-10

Parsing, Top Down Parsing, Predictive Parsing,

Week-11

Designing a Predictive Parser, Left Recursion

Week-12

Translator for Simple Expressions, Abstract and Concrete Syntax,

Week-13

Adapting the Translation Scheme, Lexical Analysis, Symbol Tables, Intermediate Code Generator,

Week-14

Syntax Directed Translator Flow role of the Lexical Analyzer, Input Buffering

Week-15

Specification of Tokens, Regular Expressions, Regular Definitions, Recognition of Tokens, Transition Diagrams.

Week-16

Finite Automata, NFA, Transition Tables

Reference Materials:

1. Compilers: Principles, Techniques, and Tools, A. V. Aho, R. Sethi and J. D. Ullman, Addison-Wesley, 2nd ed., 2006

2. Modern Compiler Design, D. Grune, H. E. Bal, C. J. H. Jacobs, K. G. Langendoen, John Wiley, 2003.

3. Modern Compiler Implementation in C, A. W. Appel, M. Ginsburg, Cambridge University Press, 2004.