

**Department Of Computer Science and Engineering**  
**Kathmandu University**  
**Dhulikhel, Kavre**



**Subject: Compiler Design**

**Course: COMP 409**

**Level: B.Sc 3<sup>rd</sup> Year 2<sup>nd</sup> Semester**

**Credit Hours: 3**

**Course Objective:** This course will focus on imparting knowledge about the Practical aspects of COMPILER DESIGN with the required basic principles behind them with some practical assignments.

**Syllabus**

**1. Introduction to Compilers**

- Compilers
- Analysis-Synthesis model
- The phases of compiler
- Error Handler and Symbol Table
- Cousins of the compiler
- Compiler Construction tools

**2. Lexical Analysis**

- Introduction
- Scanning Process
- Regular Expressions
- Finite Automaton
- Regular Expressions to DFA

**3. Syntax Analysis**

- The role of the parser
- Context-free grammars
- Writing a grammar
- Top-down parsing
- Bottom-up parsing
- LR-Parsing

**4. Syntax Directed Translation and Run-Time Environments**

- Attributes and attribute grammar
- Type Checking
- Symbol Table
- Introduction to Run-Time Environment

## **5. Introduction to Intermediate Code Generation**

- Introduction to Intermediate Code
- Three address code
- P-Code
- Issues in the design of code generation
- Target Machine

## **6. Introduction to Code Optimization**

- Introduction
- Principle sources of code optimization
- Classification of optimizations
- Implementation Technique

### **Text Book:**

1. Compilers: Principles, Techniques, and Tools by Aho, Sethi, Ullman

### **Reference Books:**

1. Compiler Construction: Principles and Practice by Kenneth C. Louden
2. Compiler Design by Dr. O.G.Kakde
3. Compiler Design by Gajendra Sharma
4. Introduction to Compiler Design by Udit Agarwal