

# CS -602: Systems Programming and Compiler Design

<b>Assemblers &amp; Loaders, Linkers:</b>	10L
One pass and two pass assembler, design of an assembler, Absolute loader, relocation and linking concepts, relocating loader and Dynamic Linking.	
[1]: chap. 3 [p36-62] Chap. 4 [p63-83]	
<b>Introduction:</b>	2L
Overview of compilation, Phases of a compiler	
[2] §1.1-§1.2 [p1-12]	
<b>Lexical Analysis:</b>	6L
Role of a Lexical analyzer, Specification and recognition of tokens, Symbol table, lex,	
2 [§3.5, p140-144],	
<b>Parsing:</b>	10L
Bottom up parsing- LR parser, yacc.	
[2] [§4.6-§4.9 p241-297]	
<b>Intermediate representations</b>	10L
Three address code generation, syntax directed translation, translation of types, control statements	
[2] [§5.1-§5.2.4, p303-314] [§ 6.2-§ 6.9, p363-425]	
<b>Storage organization:</b>	5L
Activation records, stack allocation	
[2][ §7.1-§7.2, p427-441]	
<b>Code Generation:</b>	5L
Object code generation	

[2] [p505-522]

## **Recommended Reading Material**

### **Text Books**

1. Santanu Chattopadhyaya, *Systems Programming*, PHI, 2011.
2. Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, *Compilers: Principles, Techniques, and Tools*, 2<sup>nd</sup> edition, Prentice Hall, 2006.

### **Reference Books**

3. D. M. Dhamdhere, *Systems Programming*, Tata McGraw Hill, 2011.
4. Leland Beck, D. Manjula, *System Software: An Introduction to System Programming*, 3<sup>rd</sup> edition, Pearson Education, 2008.
5. Grune D, Van Reeuwijk . K, Bal H. E, Jacobs C J H, Langendoen K, *Modern Compiler Design*, 2<sup>nd</sup> edition, Springer, 2012

### **LIST OF PRACTICALS OF PAPER NO -CS-602: SYSTEMS PROGRAMMING AND COMPILER DESIGN**

1. To implement an assembler for a hypothetical language.
2. To get familiar with lex: write a program to recognize numbers, identifiers.
3. To get familiar with yacc: write a desk calculator.