DEPARTMENT OF INFORMATION TECHNOLOGY

AUTOMATA AND COMPILER DESIGN

B.Tech-IT , III Year -I Sem

Dr. Smriti Agrawal
Assoc. Professor
J.B.Institute of Engg & Technology
Yenkapally, Moinabad(Mandal)
Himathnagar(post),Hydreabad

RESULTS TARGET

TOTAL STRENGTH OF THE CLASS:

S. No	Class / Division	No. of Students
a.	First Class with Distinction	
b.	First Class	
c.	Pass Class	

Method of Evaluation

a.	Internal Examination	2
b.	Final Examination	1

Course Objective

- xxxxxxxxxxxxxxxxxxxx

JNTU Syllabus

Unit – I	**Formal Language and Regular Expressions** : Languages, Definition Languages regular expressions, Finite Automata – DFA, NFA. Conversion of regular expression to NFA, NFA to DFA. Applications of Finite Automata to lexical analysis, lex tools.
Unit – II	**Context Free grammars and parsing :** Context free grammars, derivation, parse trees, ambiguity LL(K) grammars and LL(1) parsing
Unit – III	Bottom up parsing handle pruning LR Grammar Parsing, LALR parsing, parsing ambiguous grammars, YACC programming specification.
Unit – IV	**Semantics :** Syntax directed translation, S-attributed and L-attributed grammars, Intermediate code – abstract syntax tree, translation of simple statements and control flow statements.
Unit – V	**Context Sensitive features** – Chomsky hierarchy of languages and recognizers. Type checking, type conversions, equivalence of type expressions, overloading of functions and operations.
Unit – VI	**Run time storage:** Storage organization, storage allocation strategies scope access to now local names, parameters, language facilities for dynamics storage allocation.
Unit – VII	**Code optimization:** Principal sources of optimization, optimization of basic blocks, peephole optimization, flow graphs, Data flow analysis of flow graphs.
Unit – VIII	**Code generation:** Machine dependent code generation, object code forms, generic code generation algorithm, Register allocation and assignment. Using DAG representation of Block.

GUIDELINES TO STUDENTS

Where will this subject help?

Books / Material

Text Books
T1. Introduction to Theory of computation.Sipser,2nd Edition,Thomson. T2. Compilers Principles, Techniques and Tools Aho, Ullman, Ravisethi, Pearson Education.

Suggested / Reference Books
1. Modern Compiler Construction in C , Andrew W.Appel Cambridge University Press. 2. Compiler Construction, LOUDEN, Thomson

COURSE SCHEDULE

NUMBER OF HOURS / LECTURES AVAILABLE IN THIS SEMESTER / YEAR 65

Distribution of Hours Unit – Wise

Unit	Topic	Total No. of Hours
I	**Formal Language and Regular Expressions** : Languages, Definition Languages regular expressions, Finite Automata – DFA, NFA. Conversion of regular expression to NFA, NFA to DFA. Applications of Finite Automata to lexical analysis, lex tools.	05
II	**Context Free grammars and parsing :** Context free grammars, derivation, parse trees, ambiguity LL(K) grammars and LL(1) parsing	09
III	Bottom up parsing handle pruning LR Grammar Parsing, LALR parsing, parsing ambiguous grammars, YACC programming specification.	09
IV	**Semantics :** Syntax directed translation, S-attributed and L-attributed grammars, Intermediate code – abstract syntax tree, translation of simple statements and control flow statements.	09
V	**Context Sensitive features** – Chomsky hierarchy of languages and recognizers. Type checking, type conversions, equivalence of type expressions, overloading of functions and operations.	09
VI	**Run time storage:** Storage organization, storage allocation strategies scope access to now local names, parameters, language facilities for dynamics storage allocation.	08
VII	**Code optimization:** Principal sources of optimization, optimization of basic blocks, peephole optimization, flow graphs, Data flow analysis of flow graphs.	08
VIII	**Code generation:** Machine dependent code generation, object code forms, generic code generation algorithm, Register allocation and assignment. Using DAG representation of Block.	08
	Total	65

TOPIC WISE COVERAGE:

UNIT I: Formal Language and Regular Expressions : Languages, Definition Languages regular expressions, Finite Automata – DFA, NFA. Conversion of regular expression to NFA, NFA to DFA. Applications of Finite Automata to lexical analysis, lex tools.

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 05

S.No	Name of the Topic	Reference book code	No. of classes required
1	Languages, Definition Languages regular expressions	T1	01
2	Finite Automata – DFA, NFA. Conversion of regular expression to NFA, NFA to DFA.	T1	02
3	Applications of Finite Automata to lexical analysis, lex tools.	T1	02

UNIT-II : Context Free grammars and parsing : Context free grammars, derivation, parse trees, ambiguity LL(K) grammars and LL(1) parsing

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 09

S.No	Name of the Topic	Reference book code	No. of classes required
1	Context free grammars, derivation	T1	02
2	parse trees	T1	02
3	ambiguity LL(K) grammars	T1	02
4	LL(1) parsing	T1	03

UNIT-III : Bottom up parsing handle pruning LR Grammar Parsing, LALR parsing, parsing ambiguous grammars, YACC programming specification..

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 09

S.No	Name of the Topic	Reference book code	No. of classes required
1	Bottom up parsing handle pruning	T1	03
2	LR Grammar Parsing, LALR parsing	T1	03
3	parsing ambiguous grammars, YACC programming specification	T1	03

UNIT-IV Semantics : Syntax directed translation, S-attributed and L-attributed grammars, Intermediate code – abstract syntax tree, translation of simple statements and control flow statements.

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 09

S.No	Name of the Topic	Reference book code	No. of classes required

1	Syntax directed translation, S-attributed and L-attributed grammars,	T1	03
2	Jump and Call Instructions, Intermediate code – abstract syntax tree,	T1	03
3	translation of simple statements and control flow statements.	T1	03

UNIT-V: Context Sensitive features – Chomsky hierarchy of languages and recognizers. Type checking, type conversions, equivalence of type expressions, overloading of functions and operations.

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 09

S.No	Name of the Topic	Reference book code	No. of classes required
1	**Context Sensitive features** – Chomsky hierarchy of languages and recognizers	T1	03
2	Type checking, type conversions, equivalence of type expressions	T1	03
3	overloading of functions and operations	T1	03

UNIT-VI: Run time storage: Storage organization, storage allocation strategies scope access to now local names, parameters, language facilities for dynamics storage allocation.

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 08

S.No	Name of the Topic	Reference book code	No. of classes required
1	**Run time storage:** Storage organization,	T2	02
2	storage allocation strategies scope access to now local names,	T2	03
3	parameters, language facilities for dynamics storage allocation.	T2	03

UNIT-VII: Code optimization: Principal sources of optimization, optimization of basic blocks, peephole optimization, flow graphs, Data flow analysis of flow graphs.

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 08

S.No	Name of the Topic	Reference book code	No. of classes required
1	**Code optimization:** Principal sources of optimization,	T2	02
2	optimization of basic blocks, peephole optimization, flow graphs,	T2	03
3	Data flow analysis of flow graphs.	T2	03

UNIT-VIII: Code generation: Machine dependent code generation, object code forms, generic code generation algorithm, Register allocation and assignment. Using DAG representation of Block.

LECTURE PLAN:

TOTAL NO_ OF CLASSES: 08

S.No	Name of the Topic	Reference book code	No. of classes required
1	**Code generation:** Machine dependent code generation,	T2	03
2	object code forms, generic code generation algorithm,	T2	03
3	Register allocation and assignment. Using DAG representation of Block.	T2	02

DEPARTMENT OF INFORMATION TECHNOLOGY

INDIVIDUAL TIME TABLE

NAME OF THE FACULTY*:* Smriti Agrawal

Period	1	2	3	4		5	6	7
Day/Time	9.00-9.50	9.50-10.40	10.40-11.30	11.30-12.20	LUNCH	12.50-1.40	1.40-2.30	2.30-3.20
Mon								
Tue								
Wed								
Thu								
Fri								
Sat								

Embedded Systems (ES):

Total no of theory classes :

Total no of practical classes :

Total no of classes :

J. B.Institue of Engineering & Techology

III B.Tech -I SEM (I-MID)

BRANCH: Information Technology

SUB: Automata and Compiler Design

TIME: 60 MINUTES **MMarks: 10**

Answer any Two of the following: **(5X2=10M)**

1. xxxxxxxxxxxxxxx

a) xxxxxxxxxxxx

b) xxxxxxxxxxx

2. xxxxxxxxxxxxxxxxxx

a) xxxxxxxxxxxxxxxx

3.xxxxxxxxxxxxxxxxxxxxxx

4.xxxxxxxxxxxxxxx

J. B.Institue of Engineering & Techology
III B.Tech -I SEM (II-MID)
BRANCH: Information Technology
SUB: Automata and Compiler Design

TIME: 60 MINUTES **MMarks: 10**

Answer any Two of the following: **(5X2=10M)**

1. xxxxxxxxxxxxxxx
a) xxxxxxxxxxxx
b) xxxxxxxxxxx

2. xxxxxxxxxxxxxxxxxx
   a) xxxxxxxxxxxxxxxx
3.xxxxxxxxxxxxxxxxxxxxxx
4.xxxxxxxxxxxxxxx

Marks for Internal Theory Examination

ROLL.NO	NAME OF THE STUDENT	I MID	II MID	Best