



# SWARNANDHRA

## COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
16CS6T03	COMPILER DESIGN	VI	CSE	5	2019	25-11-19
<b>COURSE OUTCOMES</b>						
1	Understand about language processors and its phases.(K2)					
2	Demonstrate about scanning of tokens.(K2)					
3	Perform the syntax analysis by using parsing techniques.(K3)					
4	Perform Semantic analysis using attribute grammar.(K3)					
5	Compare different memory Management techniques in runtime environment.(K4)					
6	Ascertain optimization techniques for intermediate code forms and code generation.(K5)					
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
<b>I</b>	C01: Understand about language processors and its phases.(K2)	1.01	<b>Preprocessors</b>	T1	1	Chalk and Talk, PPT & Video
		1.02	<b>Compiler</b>	T1	1	
		1.03	<b>Assembler</b>	T1	1	
		1.04	<b>Linkers and loaders</b>	T1	1	
		1.05	<b>Difference between compiler and interpreter</b>	T1	1	
		1.06	<b>Structure of a compiler</b>	T1	1	
		1.07	<b>Phases of a compiler</b>	T1	1	
		1.08	<b>Role of lexical analysis</b>	T1	1	
		1.09	<b>Input buffering</b>	T1	1	
		1.10	<b>Specification of Tokens</b>	T1	1	
		1.11	<b>Recognition of Token</b>	T1	1	
		1.12	<b>The Lexical Analyzer Generator Lex</b>	T1	1	
			Course Beyond the Syllabus		<b>Compiler Construction Tools</b>	
			<b>Boot Strapping</b>	T1	1	
			<b>Design of Lexical Analyzer for a sample Language</b>	T1	1	
<b>Total</b>					<b>15</b>	
<b>II</b>	C02: Demonstrate about scanning of tokens.(K2)	2.01	<b>Role of a parser</b>	T1	1	Chalk and Talk, PPT & Video
		2.02	<b>Context free Grammar</b>	T1	1	
		2.03	<b>Top Down parsing</b>	T1	1	
		2.04	<b>Recursive Descent Parsing</b>	T1	1	
		2.05	<b>Non recursive Predictive parsing</b>	T1	1	
		2.06	<b>FIRST and FOLLOW</b>	T1	1	
		2.07	<b>LL(1) Grammar</b>	T1	1	
		2.08	<b>LL(1) Grammar Examples</b>	T1	1	



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		2.09	<b>Error recovery in Predictive Parsing</b>	T1	1	
		Course Beyond the Syllabus	<b>Error Handling and Recovery in Syntax Analyzer</b>	T1	1	
<b>Total</b>					<b>10</b>	
<b>III</b>	CO3: Perform the syntax analysis by using parsing techniques. (K3)	3.01	<b>Reductions</b>	T1,R1	1	Chalk and Talk, PPT
		3.02	<b>Handle Pruning</b>	T1,R1	1	
		3.03	<b>Shift Reduce Parsing</b>	T1,R1	1	
		3.04	<b>Introduction to simple LR</b>	T1,R1	1	
		3.05	<b>Why LR Parsers</b>	T1,R1	1	
		3.06	<b>Construction of SLR Tables</b>	T1,R1	1	
		3.07	<b>Construction of SLR Tables</b>	T1,R1	1	
		3.08	<b>Construction of CLR(1)</b>	T1,R1	1	
		3.09	<b>Construction of CLR(1) Examples</b>	T1,R1	1	
		3.10	<b>LALR Parsing tables</b>	T1,R1	1	
		3.11	<b>LALR Parsing tables Examples</b>	T1,R1	1	
		Course Beyond the Syllabus	<b>YACC-Automatic Parser generator</b>	T1,R1	1	
<b>Total</b>					<b>12</b>	
<b>IV</b>	CO4: Perform Semantic analysis using attribute grammar. (K3)	4.01	<b>Storage organization</b>	T1,R2	1	Chalk and Talk, PPT & Video
		4.02	<b>Stack Allocation</b>	T1,R2	1	
		4.03	<b>Static allocation</b>	T1,R2	1	
		4.04	<b>Heap Management</b>	T1,R2	1	
		4.05	<b>Parameter passing mechanisms</b>	T1,R2	1	
		4.06	<b>DAG</b>	T1,R2	1	
		4.07	<b>Three Address Code</b>	T1,R2	1	
		4.08	<b>Quadruples</b>	T1,R2	1	
		4.09	<b>Triples</b>	T1,R2	1	
		4.10	<b>Indirect Triples</b>	T1,R2	1	
				Course Beyond the Syllabus	<b>Source Language Issues</b>	
<b>Total</b>					<b>11</b>	
<b>V</b>	CO5: Compare different memory Management techniques in runtime environment. (K4)	5.01	<b>DAG Representation of a block</b>	T1	1	Chalk and Talk, PPT & Video
		5.02	<b>Machine independent code optimization</b>	T1	1	
		5.03	<b>Common sub expression elimination</b>	T1	1	
		5.04	<b>Constant folding</b>	T1	1	
		5.05	<b>Copy propagation</b>	T1	1	
		5.06	<b>Dead code elimination</b>	T1	1	
		5.07	<b>Strength reduction</b>	T1	1	
		5.08	<b>Loop optimization</b>	T1	1	
				Course Beyond Syllabus	<b>Simple Cod generator Algorithm</b>	
<b>Total</b>					<b>09</b>	



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VI	CO6: Ascertain optimization techniques for intermediate code forms and code generation. (K5)	6.01	<b>Peephole optimization: Eliminating redundant loads and stores</b>	T1	1	Chalk and Talk, PPT & Video
		6.02	<b>Eliminating unreachable code, Flow of control optimizations</b>	T1	1	
		6.03	<b>Algebraic Simplifications</b>	T1	1	
		6.04	<b>Register Allocation: Global Register Allocation</b>	T1	1	
		6.05	<b>Usage Counts</b>	T1	1	
		6.06	<b>Instruction scheduling</b>	T1	1	
		6.07	<b>Inter Procedural Optimization</b>	T1	1	
		6.08	<b>Garbage collection via reference counting</b>	T1	1	
		Course Beyond the Syllabus	<b>The "Dangling-Else" Ambiguity"</b>	T1	1	
<b>Total</b>				<b>09</b>		
<b>CUMULATIVE PROPOSED PERIODS</b>					<b>66</b>	

### Text Books:

Sl. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	Ravi Sethi, Jeffrey D. Ulman; Compilers: Principles, Techniques and Tools: 2nd Edition, Pearson Education-2007
2.	Andrew N. Appel, Modern Compiler Implementation in C, Cambridge University Press-2004

### Reference Books:

Sl. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	John R. Levine, Tony Mason, Doug Brown, Lex & Yacc -, O'reilly -2015
2.	Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley Reamtech, Modern Compiler Design-2012
3.	Engineering a Compiler-Cooper & Linda, Elsevier-2012
4.	Louden, Thomson. Principles of compiler design, V. Raghavan Compiler Construction 2nd ed, TMH, 2011

### Web Details

1.	<a href="https://www.wisdomjobs.com/e-university/compiler-design-tutorial-1144.html">https://www.wisdomjobs.com/e-university/compiler-design-tutorial-1144.html</a>
2.	<a href="https://tutorialspoint.dev/computer-science/compiler-design">https://tutorialspoint.dev/computer-science/compiler-design</a>
3.	<a href="https://rdw.rowan.edu/oer/1/">https://rdw.rowan.edu/oer/1/</a>
4.	<a href="http://hjemmesider.diku.dk/~torbenm/Basics/basics_lulu2.pdf">http://hjemmesider.diku.dk/~torbenm/Basics/basics_lulu2.pdf</a>
5.	<a href="http://www.freebookcentre.net/ComputerScience-Books-Download/Principles-of-Compiler-Design-and-Advanced-Compiler-Design.html">http://www.freebookcentre.net/ComputerScience-Books-Download/Principles-of-Compiler-Design-and-Advanced-Compiler-Design.html</a>

	Name	Signature with Date
i. Faculty I	Mr.S.Umamaheswara Rao	
ii. Faculty II (for common Course)	Mr.M.Lakshmi Narayana	
iii. Course Coordinator	Mr.S.Umamaheswara Rao	
iv. Module Coordinator	Mr.K Dilip Kumar	
v. Programme Coordinator	Dr. P. Srinivasulu	

**HOD**

**Principal**