NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	B. TECH / CSE		
Course Title	COMPREHENSIVE VIVA-VOCE		
Course Code	CSIR81	**No. of Credits**	1
Course Code of Pre-requisite subject(s)		**Semester**	VIII
Session	JAN 2023	**Section (if, applicable)**	A & B
Name of Faculty	Dr. Sitara K. Dr. C. Oswald	**Department**	CSE
Official Email	sitara@nitt.edu oswald@nitt.edu	**Telephone No.**	-
Name of Course Coordinator(s) (if, applicable)	NIL		
Official E-mail	NIL	**Telephone No.**	NIL
Course Type	GIR Course		

Syllabus (approved in BoS)

Section 1: Engineering Mathematics:
Discrete Mathematics: Propositional and first order logic. Sets, relations, functions, partial orders and lattices. Graphs: connectivity, coloring. Linear Algebra: Matrices, determinants, system of linear equations, eigenvalues and eigenvectors. Probability and Statistics: Random variables, Normal, Uniform, Exponential, Poisson and binomial distributions. Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.

Section 2: Digital Logic
Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

Section 3: Computer Organization and Architecture
Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining. Memory hierarchy: cache, main memory and secondary storage.

Section 4: Programming and Data Structures
Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

Section 5: Algorithms
Searching, sorting, hashing. Asymptotic worst-case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, shortest paths.

Section 6: Theory of Computation
Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and contex-free languages, pumping lemma. Turing machines and undecidability.

Section 7: Compiler Design
Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation, Local optimization, common subexpression elimination

Section 8: Operating System
System calls, Processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPUscheduling. Memory management and virtual memory. File systems.

Section 9: Databases

ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

Section 10: Computer Networks

Concept of layering. OSI and TCP/IP Protocol Stacks; Basics of packet, circuit and virtual circuit-switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CIDR notation, Basics of IP support protocols (ARP, DHCP, ICMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UDP, TCP, sockets.

COURSE OBJECTIVES

- To develop problem solving skills on varieties of data structures and on the different programming paradigms
- To develop skills to apply computing knowledge for practical applications
- To explore the features of Computer Organization and Architecture, OS, Compiler, DBMS, and Networking and understand their interrelation
- To learn the hierarchy of formal languages with their scope and limitations

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO)
1. Ability to solve problem on varieties of data structures and on the different programming paradigms	1,2,5,9
2. Ability to apply computing knowledge for practical applications	3,4,8,10,11,12
3. Ability to understand the features of Computer Organizationand Architecture, OS, Compiler, DBMS, and Networking and understand their interrelation	1,2,5,7,9
4. Ability to apply the theory of formal languages in computing	1,2,5,9

COURSE PLAN – PART II

COURSE OVERVIEW

This course focuses on developing problem solving skills on the field of computer science and engineering and also prepares them for facing interviews and group discussions.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	18/01/2023 to 20/01/2023 2 hours	Discrete Mathematics; Graphs; Linear Algebra; Probability and Statistics	PPT & Discussion
2	30/01/2023 to 03/02/2023 2 hours	Probability and Statistics; Digital Logic	PPT & Discussion
3	06/02/2023 to 10/02/2023 2 hours	Digital Logic; Computer Organization and Architecture	PPT & Discussion
4	13/02/2023 to 17/02/2023 2 hours	Computer Organization and Architecture, Programming and Data Structures	PPT & Discussion

5	27/02/2023 to 03/03/2023 2 hours	Programming and Data Structures	PPT & Discussion
6	06/03/2023 to 10/03/2023 2 hours	Algorithms	PPT & Discussion
7	13/03/2023 to 17/03/2023 2 hours	Theory of Computation	PPT & Discussion
8	27/03/2023 to 31/03/2023 2 hours	Compiler Design	PPT & Discussion
9	03/04/2023 to 07/04/2023 2 hours	Operating System	PPT & Discussion
10	10/04/2023 to 14/04/2023 2 hours	Databases	PPT & Discussion
11	17/04/2023 to 21/04/2023 2 hours	Computer Networks	PPT & Discussion
12	24/04/2023 to 28/04/2023 2 hours	Computer Networks	PPT & Discussion

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	23/02/2023	1 hour	25
2	Cycle Test 2	23/03/2023	1 hour	25
CPA	Compensation Assessment*	27/04/2023	1 hour	25
3	Final Assessment *	As per Academic schedule	2 hours	25
4	Viva Voce	As per academic schedule	-	25

***mandatory; refer to guidelines on page 4**

COURSE EXIT SURVEY

1. Students' feedback through PAC meetings
2. Feedbacks are collected before final examination through MIS or any otherstandard format followed by the institute
3. Students, through their Class Representatives, may give their feedback at any time to the course faculty which will be duly addressed.

COURSE POLICY

MODE OF CORRESPONDENCE (email/ phone etc)

Email and Phone

COMPENSATION ASSESSMENT POLICY

1. One compensation assessment will be given after completion of Cycle Test 1 and 2 for the students those who are absent for any assessment due to genuine reason.
2. Compensatory assessments would cover the syllabus of Cycle tests 1 & 2
3. The prior permission and required documents must be submitted for absence signed by HoD/CSE.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

1. The Course Coordinator is available for consultation during the time intimated tothe students
2. Relative grading adhering to the instructions from the office of the dean (Academic) will be adopted for the course.

For Approval

Sitaram
C. Oswald

Course Faculty_____ **CC-Chairperson**_____ **HOD**_____