SREENIDHI EDUCATIONAL GROUP | SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY AUTONOMOUS

B.Tech. (CSE) - Cyber Security

II Year II Semester

AY 2022-2023

Lesson Plans

Sl. No	Course Category	K/S/V	Dept Course	Course Code	Course	L	T	P/D	C	Max. Marks	
										CIE	SEE
1	PC	K	CSE	8EC41	**Introduction to Cyber Security**	3	0	0	3	30	70
2	PC	K	IT	8FC05	**Data Communications and Computer Networks**	2	1	0	3	30	70
3	PC	K	CSE	8EC03	**Database Management Systems**	2	1	0	3	30	70
4	PC	K	CSE	8EC06	**Operating Systems**	2	1	0	3	30	70
5	ES	K	ECE	8CC55	**Digital Electronics**	2	0	0	2	30	70
6	HS	K	MBA	8ZC01	**Economics, Accountancy and Management Science**	2	0	0	2	30	70
7	HS	S	S&H	8HC03	**Soft Skills**	1	0	2	2	30	70

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Lesson Plan for Introduction to Cyber Security (8EC41)

SNo.	Topics	Number of Classes	Classes/Unit
1.	**Unit – I Introduction To Security Trends**: The Computer Security Problem	**1**	**8**
2.	Targets and Attacks	2	
3.	Approaches to Computer Security, Ehtics	1	
4.	Basic Security Terminology	2	
5.	Security Models	2	
6.	**Unit – II Operational and Organizational Security**: Policies, Procedures,	**1**	**9**
7.	Standards, and Guidelines	2	
8.	Security Awareness and Training	1	
9.	Interoperability Agreements	1	
10.	The Security Perimeter, Physical Security	1	
11.	Environmental Issues, Wireless	1	
12.	Electromagnetic Eavesdropping	1	
13.	People—A Security Problem, People as a Security Tool	1	
14.	**Unit – III Cryptography**: Cryptography in Practice, Historical Perspectives	**1**	**9**
15.	Algorithms	1	
16.	Hashing Functions	1	
17.	Symmetric Encryption	2	
18.	Asymmetric Encryption	2	
19.	Quantum Cryptography	1	
20.	Cryptography Algorithm Use	1	
21.	**Unit – IV Authentication and Remote Access**: User, Group, and Role Management	**1**	**7**
22.	Password Policies	1	
23.	Single Sign-On	1	
24.	Security Controls and Permissions	1	
25.	Preventing Data Loss or Theft	1	
26.	Remote Access Process	1	
27.	Remote Access Methods	1	
28.	**Unit – V Intrusion Detection Systems**: History of	**1**	**8**

	Intrusion Detection Systems, IDS Overview		
29.	Network-Based IDSs	1	
30.	Host-Based IDSs	1	
31.	Intrusion Prevention Systems	1	
32.	Honeypots and Honeynets	2	
33.	Tools	2	
34.	**Unit- VI e-Banking Security:** Online Banking Security	**1**	
35.	Mobile Banking Security	1	
36.	Security of Debit and Credit Card	1	**7**
37.	UPI Security	2	
38.	e-wallet security guidelines	1	
39.	Security guidelines of PoS.	1	
	Total	**48**	**48**

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Lesson Plan for Data Communications and Computer Networks (8EC05)

Units	No. of periods allocated	Periods	Topic to be covered
Unit-I	11	2	**Introduction**: Data Communications
		2	Networks, Network Topologies
		1	The Internet, Protocols and Standards
		4	The OSI Model, Layers in the OSI Model
		2	TCP/IP Protocol Suite, **Physical layer & Media:** Guided Media, Unguided Media.
Unit-II	11	1	Data and Signals, Analog and Digital
		3	Digital Transmission, Digital-to-Digital Conversion, Analog-to-Digital Conversion
		1	Analog Transmission
		2	Digital-to-analog Conversion, Analog-to-analog Conversion
		2	Bandwidth utilization
		2	Multiplexing and De multiplexing.
Unit-III	11	2	**Switching:** Circuit-Switched Networks, Packet Switching, Message Switching.
		1	**Data Link Layer:** Services, Data Link Control
		2	Framing, Flow and Error Control
		2	Error Detection and Correction,

		2	CRC, Checksum, Hamming code
		2	Sliding Window Protocols
Unit-IV	11	1	**MAC sub layer:** MAC Address, Multiple Access Protocol
		2	Aloha, CSMA Protocols
		2	IEEE Standards, Standard Ethernet, Fast Ethernet, Gigabit Ethernet, IEEE 802.11.
		2	**Connecting Devices:** Repeaters, Hubs, Bridges, Switches, Routers, Gateways.
		2	**Network Layer:** Logical Addressing, IPv4
		2	IPv6, Subnetting and Super netting, Internetworking
Unit-V	11	1	Datagram and Virtual-Circuit Networks,
		2	Forwarding and Routing, Routing Protocols: Flooding, Shortest path routing technique,
		3	Distance Vector routing, Count to Infinity problem, Link State routing, Hierarchical routing technique, Multicasting, Broadcasting.
		5	**Internet control protocols:** ICMP, ARP, RARP, DHCP **Congestion Control:** Congestion Control in virtual – circuits and Datagram Subnets, **Traffic Shaping:** Leaky-Bucket and Token-Bucket Algorithms.
Unit-VI	11	1	Transport Layer:Transport Services
		1	Connection management(establishment, release)
		2	TCP , UDP protocol
		1	Application Layer
		1	Domain name system, FTP

		1	HTTP,
		2	SMTP, WWW,
		2	Simple Network Management Protocol (SNMP) **Security and Privacy**: Security attacks and services.

Total Classes - 11

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Lesson Plan for Database Management Systems (8EC03)

SL. NO.	UNIT NO	NO OF PERIODS	TOPIC
1	I	1	Data Vs Information, Data base Vs file system
2		1	View of data, Data abstraction
3		1	Instances and Schemas, Data models
4		1	The E-R Model, Relational Model
5		1	Database Languages – DDL -DML
6		2	Database System Structure
7		2	Conceptual design with ER model
8		1	Application E-R Model for college
			10 Classes
7	II	1	Introduction to the relational model
8		2	Integrity Constraints
9		1	Logical data base design
10		2	Introduction to Views and operations on Views
11		3	Relational algebra, relational calculus
12		2	Domain and tuple calculus
			11 Classes
13		2	Forms of basic SQL Queries(Examples)

14	III	2	Nested Queries, correlated Queries
15		2	Comparison and aggregate operators
16		2	Logical connectivity
17		1	Operations on NULL values
18		1	Complex Integrity Constraints in SQL Queries
			10 Classes
19		2	Schema refinement
20		2	Decomposition
	IV		
21		4	Normalization upto 3NF
22		2	Loss less join and dependency preserving
23		2	Multi valued dependencies
			12 Classes
24		1	ACID properties
25		1	Transactions and schedules
26		2	Concurrent execution of Transaction
	V		
27		2	Lock based protocols
28		2	Recovery and Atomicity
29		1	Buffer management
30		1	Failure with loss of non-volatile storage
			10 Classes
31		1	Storage and File organization
32		1	Indexing
33		1	Hash and Tree based Indexing
34		1	Comparison of file organization
	VI		
35		2	Disks and files
36		2	Tree structure Indexing, ISAM
37		2	B Trees, B+ Trees
38		1	Application – creating B+ tree
			11 Classes

TOTAL NO OF PERIODS = 64

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Lesson Plan for Operating Systems (8EC06)

UNIT-1			
Lecture no.	Topic	No.of classes required	Cumulative no.of classes
1	Introduction to Operating System, Computer System Architecture	2	2
2	Single Processor System, Multiprocessor System, Clustered System	1	3
3	Multiprogramming System, Multitasking (Time sharing) system	1	4
4	Operating System Services, Types of System Calls	2	6
5	System Programs, Operating System Structure: single structure	2	8
6	Layered approach, micro kernels, modules.	2	10
7	Revision	1	11
UNIT-2			
8	Process Management: Process concept	1	12
9	Process scheduling, operation on processes	2	14
10	CPU scheduling, scheduling criteria	2	16
11	Scheduling algorithms -First Come First Serve (FCFS)	1	17
12	Shortest-Job-First (SJF), Priority Scheduling	3	20
13	Round Robin(RR), Multilevel Queue Scheduling. Engg.	2	22
14	Applications – Process scheduling in Windows, Linux.	2	24
UNIT-3			
15	Process-Synchronization & Deadlocks	1	25
16	Critical Section Problems	2	27
17	Semaphores	2	29
18	Monitors	2	31

19	Deadlock Characterization, methods for handling deadlocks	2	33
20	Deadlock prevention, Avoidance	2	35
21	Deadlock Detection; Deadlock recovery.	2	37
22	Revision	1	38
	UNIT-4		
23	Memory Management: Logical & Physical Address Space	2	40
24	Swapping, Contiguous memory allocation	1	41
25	Paging and Segmentation techniques	2	43
27	Segmentation with paging	2	45
28	Virtual memory: Demand Paging	2	46
29	Page-Replacement Algorithms, Thrashing.	2	48
30	Engg. Applications – Memory management in Windows, Linux.	1	49
	UNIT-5		
31	File System: Different types of files	1	50
32	File Access methods, various File allocation methods	2	52
33	Various File allocation methods	1	53
34	Directory structures	1	54
37	Disk Scheduling and management and its associated algorithms.	3	57
	UNIT-6		
38	I/O Systems: I/O Hardware	1	58
39	Application I/O Interface, Kernel	1	59
40	Transforming I/O requests, Performance Issues.	1	60
41	Protection and Security: Goals of protection	1	61
42	Principles of protection, Access matrix	1	62
43	Access control list, Capability List	1	63
44	Security Attacks, Program threats.	1	64
45	Revision	1	65

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LESSON PLAN FOR DIGITAL ELECTRONICS (8CC55)

S.L No	Unit No	Total no of Periods	Topics to be covered	Reg/ Additional	Teaching aids LCD/OHP/BB	Remarks
1	**I**	**8**	**Overview of DIGITAL ELECTRONICS**	**Additional**	BB,PPT	
2			Introduction to unit-1: Number systems	Regular	BB,PPT	
3			Number base conversions	Regular	BB,PPT	
4,5			AND, OR, NOT, NAND, NOR and Exclusive-OR operations,	Regular	BB,PPT	
6			signed binary representation	Regular	BB,PPT	
7			Boolean addition and subtraction	Regular	BB,PPT	
8			1's complement and 2's complement operations	Regular	BB,PPT	
9			Characteristics of digital lCs	Regular	BB,PPT	
10			Error detecting and correcting codes	Regular	BB,PPT	
11	**II**	8	Boolean algebra	Regular	BB,PPT	
12			Postulates and theorems, Standard representation for logic functions			
13			3&4 -vareiable Karnaugh map method with an example problem	Regular	BB,PPT	
14			5 variable k-map method with an example problem.			
15			Prime implicants, don't care combinations With an example problem	Regular	BB,PPT	
16			Minimize the SOP and POS forms using k-map method.	Regular	BB,PPT	

17			Quine-McCluskey Tabular Method with example problems.	Regular	BB,PPT	
18			Tabular method with don't care combinations	Regular	BB	
19	**III**	**11**	**Design of combinational circuits**	Regular	BB,PPT	
20			Half adder, Full adder.	Regular	BB,PPT	
21			Half subtractor, Full subtractor	Regular	BB,PPT	
22			BCD arithmetic	Additonal	BB,PPT	
23			digital comparator	Regular	BB,PPT	
24			Encoders ,Priority encoder	Regular	BB,PPT	
25			Decoders, Multiplexers	Regular	BB,PPT	
26			Expanding Multiplexer, Demultiplexer	Regular	BB,PPT	
27			Parity bit generators, parity checker	Regular	BB,PPT	
28			Code converters	Regular	BB,PPT	
29			Combinational vs Sequential circuits	Regular	BB,PPT	
No		**Total no. of Periods**	**Topic Covered**	**Additional**	**LCD/OHP/BB**	
33	**IV**	9	Latches vs Flip-flop	Regular	BB,PPT	
34			SR latch NAND/NOR version	Regular	BB,PPT	
35			SR latch with clock signal	Regular	BB,PPT	
36			Gated D-Latch	Regular	BB,PPT	
37			SR, D, JK,T Flipflops	Regular	BB,PPT	
38			Master slave JK Flip-flop	Regular	BB,PPT	
39			Excitation tables for SR,D.JK,T Flipflops	Regular	BB,PPT	
40			Conversion of Flip-Flops: SR-JK, JK-SR	Regular	BB,PPT	
41			Conversion of Flip-Flops: JK-D, D-JK	Regular	BB,PPT	
42	**V**	**10**	**Asynchronous Up Counters**	**Regular**	**BB,PPT**	
43			Asynchronous down Counters	Regular	BB,PPT	
44			Asynchronous up/down Counters	Regular	BB,PPT	
45			Asynchronous Mod-N counter	Regular	BB,PPT	
46			Synchronous counter design steps	Regular	BB,PPT	
47			3-bit synchronous counter design	Regular	BB,PPT	
48			Synchronous MOD-N counter designs	Regular	BB,PPT	
49			Ring counter,Twisted ring counter	Regular	BB,PPT	
50			Shift registers: SISO,SIPO,PISO,PIPO	Regular	BB,PPT	

51			Universal shift register	Regular	BB,PPT	
52	**VI**	**6**	**Programmable logic devices :PROM, with an example problem**	**Regular**	**BB,PPT**	
53			Programmable logic devices :PLA and PAL with an example problem	Regular	BB,PPT	
54			Realization of switching functions using PLD'S	Regular	BB,PPT	
55			Memory organization and operation,	Regular	BB,PPT	
56			expanding memory size	Regular	BB,PPT	
57			classification and characteristics of memories,	Regular	BB,PPT	

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Lesson Plan for Economics, Accountancy and Management Science (8ZC01)

S.NO	UNIT	NO. OF PERIODS	TOPIC TO BE COVERED
1	I	8	Introduction to Economics, Definition & Micro & Macro
2			Introduction to Managerial Economics, Meaning
3			Nature, Scope & Importance of Managerial Economics
4			Introduction to Demand, Law of Demand, Definition, Determinants of Demand, Exemptions to law of Demand
5			Types of Demand, Introduction to Elasticity of Demand
6			Types of Price Elasticity of Demand
7			Demand Forecasting Techniques, Introduction to supply
8			Production Function and Economies of scale
9	II	10	Introduction to costs, Types of costs, Cost Analysis
10			Introduction to Revenue, Revenue Analysis
11			Introduction to Breakeven Analysis, Determinants of BEP
12			BEP Analysis using graphical and mathematical model
13			Simple problems on Breakeven point
14			Introduction to Market, Market Structure
15			Classifications of Market, Perfect competition, Features
16			Price-output determination under perfect competition
17			Price-output determination under Monopoly Market

18			Price-output determination under Monopolistic competition
19			Introduction to Financial Accounting, Definition
20			Accounting Meaning, Advantages and limitations
21			Accounting cycle process, Introduction to Double entry system-Advantages & Limitations
22			Introduction to Booking , Book keeping vs. Accounting
23			Introduction to Types of Accounts, Golden Rules
24	**III**	**11**	Introduction to Journal Book, Journal format
25			Introduction to Ledger Book, Ledger format
26			Ledger Types and Balancing process
27			Introduction to Trial Balance, Advantages of Trial Balance
28			Trial Balance Preparation Methods
29			Simple Problems on Trial Balance
30			Introduction to Final Accounts
31			Introduction to capital expenditure & Revenue expenditure
32			Final Accounts-Trading, P/L and Balance sheet
33			Trading, P/L and Balance sheet Format
34	**IV**	**9**	Trading Account proforma-Direct expenses, Revenues
35			Profit & Loss Account proforma -Indirect expenses, Incomes
36			Balance sheet proforma-List of Assets and Liabilities
37			Introduction to Adjustments and their treatment
38			Final Accounts –Adjustment problems with solution

39	V	12	Introduction to Management, Meaning & Definition
40			Introduction to Management, Meaning & Definition
41			Functions of Management, Principles of Management
42			Functions of Management, Principles of Management
43			Levels of Management-Top, Middle & Lower level
44			Scientific management Principles –F.W.Taylor
45			14 Principles of management-Henry Fayol
46			Maslow's Need Theory
47			Types of Planning, Planning process
48			Introduction to Organization, Organization structure
49			Types of Organization structure with suitable examples
50			Types of Organization structure with suitable examples
51	VI	9	Introduction to Organizational Behavior
52			Need and significance of Organizational behavior
53			Introduction to Perception , Perceptual selectivity and organization
54			Perceptual Distortions Attribution analysis
55			Perceptual Distortions Attribution analysis
56			Attribution theories, Johari Window
57			Transactional Analysis Personality
58			Transactional Analysis Personality
59			Determinants of personality Formation of Attitudes
60			Determinants of personality Formation of Attitudes

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Lesson Plan for Soft Skills (8HC03)

Units	Tutorial (1 per week)	No. of Periods	Lab (2 per week)	No. of Periods
1. Know Yourself	1.1 Importance of knowing yourself 1.2 SWOT / SWOC Analysis 1.3 SWOT / SWOC Grid	**1** **1**	Practice exercises on • Self-Analysis • Questionnaire, • SWOT Practice	**4**
2. Organizing Oneself	2.1 Developing positive outlook towards life 2.2 Time management 2.3 Goal Setting	**1** **1**	Practice activities on • Managing time • Goal Setting	**4**
3. Verbal Aptitude	3.1 Reading Comprehension: Strategies to comprehend difficult passages from a book; SQ3R (survey, question, read, recite, and review) 3.2 Word Analogies 3.3 Spotting Errors	**1** **1** **1** **1**	Practice exercises on • Reading from difficult passages from books • Word analogies • Spotting Errors • Sentence Completion / Sentence Equivalence	**8**
4. Skills to Excel	4.1 Team work and Team Dynamics - Collaboration and Leadership 4.2 Decision Making, Design Thinking 4.3 Critical thinking and Creative	**1** **1** **1**	Practice activities on • Team building activities • Practice Activities, Case Studies and Group Discussions on decision making and problem solving, creativity and	**6**
5.Self-Management Skills	5.1 Emotional Intelligence 5.2 Stress Management	**1** **1**	Practice activities on • Case Studies and Group Discussions on managing stress and enhancing emotional intelligence.	**4**

6. Interview Skills	6.1 Interview Skills: Meaning and Purpose of an Interview 6.2 Types of interviews; Interview Preparation techniques	**1** **1**	Mock Interviews	**6**