

CHAPTER 8: LEARNING CONTENTS AND STUDENTS' LEARNING OUTCOMES Grade X

Contents	Students' Learning Outcomes	R	U	AP	AN	E	C
Students will be able to:							
Unit # 1 Troubleshooting							
Introduction	<ol style="list-style-type: none"> 1. What is troubleshooting 2. Steps in Troubleshooting <ol style="list-style-type: none"> a. Identify problem b. Establish a theory of probable cause c. Test the theory to determine the cause d. Establish a plan of action to resolve the problem and implement the solution e. Verify the full system functionality f. Document findings, actions and outcomes to take preventive measures for future 3. Simple Example problems and their troubleshooting <ol style="list-style-type: none"> a. Power button will not start computer b. Mouse is not working 		*p				
Commonly Encountered Technology Issues	<ol style="list-style-type: none"> 1. Understanding and troubleshooting common technology issues <ol style="list-style-type: none"> a. Troubleshooting Personal devices <ol style="list-style-type: none"> i. Keyboard ii. Monitor iii. Speaker (sound) iv. Mic v. Printer vi. Scanner vii. Projector viii. Hard Disk or USB 		*p				

	<ul style="list-style-type: none"> b. Troubleshooting Network devices <ul style="list-style-type: none"> i. Internet ii. Network Printer iii. Network Drive (File Sharing access) c. Troubleshooting Software <ul style="list-style-type: none"> i. The computer is frozen ii. A program is not responding iii. The computer is slow iv. Operating system crash v. The browser's homepage suddenly changed. <p>2. Using computer's built-in help</p> <p>3. Using Internet to figure out complex technology issues</p>									
Unit # 2 Wireless Communication										
Wireless Networks	<p>Explain wireless networks</p> <p>Explain advantages and disadvantages of wireless networks</p> <p>Define following terms</p> <ul style="list-style-type: none"> a. Radio signals b. Radio transceiver c. Access point d. Line of sight communication <p>Difference between short distance and long distance wireless communication</p>	*	*							
Short distance wireless communication	<p>1. Explain the following types of short distance wireless technologies</p> <ul style="list-style-type: none"> a. Wi-Fi b. Wi-Max c. Bluetooth 		*							

	d. Infrared						
Long distance communication	<ol style="list-style-type: none"> 1. Explain the following types of long distance wireless technologies <ol style="list-style-type: none"> a. Cellular or Mobile communication <ol style="list-style-type: none"> i. Explain requirement of mobile communication ii. Identify features and limitation of mobile communication system iii. Explain the architecture for communication over mobile devices b. Global positioning system (GPS) c. Geostationary Earth orbit (GEO) <ol style="list-style-type: none"> i. Medium Earth orbit(MEO) ii. Low Earth orbit (LEO) 	*	*				
Unit # 3 Data Security							
Data and its significance	<ol style="list-style-type: none"> 1. Students will be able to explain various processes related to data <ol style="list-style-type: none"> a. Generation b. Acquisition c. Storage d. Processing and Analysis e. Transmission 2. Students will be able to understand significance of data in the current data intensive world <ol style="list-style-type: none"> a. Value and importance of Data b. Data Security c. Data Privacy 		*				
Data Encryption	<ol style="list-style-type: none"> 1. Explain data Encryption and its significance for data security and privacy 		*				

	<ol style="list-style-type: none"> 2. Difference between data Encryption and Steganography 3. Understand and elaborate simple encryption techniques <ol style="list-style-type: none"> a. Symmetric Key Encryption <ol style="list-style-type: none"> i. Caesar Cypher <ol style="list-style-type: none"> 1. Shift Cypher 2. Substitution Cypher b. Asymmetric Key Encryption 4. Understand concept of public and private key in sending receiving messages 5. Crypto System 6. RSA Cryptosystem <ol style="list-style-type: none"> a. Generation of Public and Private Key b. Data Encryption c. Data Decryption 		* *	*			
Unit # 4 Introduction to Linear Regression							
Learning Linear Regression	<ol style="list-style-type: none"> 1. Student should be able to reiterate the following formulas <ol style="list-style-type: none"> a. Mean b. Mode c. Median d. Regression Line Formula e. Correlation factor in regression formula 	*					
Applying Linear Regression	<ol style="list-style-type: none"> 1. Student should be able to perform following activities <ol style="list-style-type: none"> a. Collect a sample data set like previous grade activity b. Apply above given formulas on the data set to calculate the regression line c. Put the collected data into a spreadsheet and calculate the regression line d. Apply interpolation on the regression model to predict the values at unseen points within the data points 			*			

	e. Apply extrapolation on the regression model to predict the values on unseen data out of the data points in the current data set						
Unit # 5 Testing and Debugging							
Introduction	<ol style="list-style-type: none"> 1. Understand the concept of Testing 2. Understand the concept of Debugging 3. Understand the concept of Error and Warnings 4. Understand the importance of Debugging process in software development 		** * *				
Debugging in C	<ol style="list-style-type: none"> 1. Understand the process of debugging in C 2. Apply Debugging using <ol style="list-style-type: none"> a. Watches and Tracing through the Program (Include a step by step example through some program) 		*	*			
Unit # 6 Repetition Structures							
	<ol style="list-style-type: none"> 1. Explain the concept of loop structure 2. Know the types of Loop constructs available <ol style="list-style-type: none"> a. Precondition (while and for) b. Post Condition (do-while) 3. Explain and Apply while and for loops in programs in C 4. Explain the concept of a nested loop 5. Use loops to read and write data in array. 		* * * *	* *			
Unit # 7 Data Structures							
Introduction	<ol style="list-style-type: none"> 1. Differentiate between Built-in and User Defined Data Types 2. Define the term Data structures 3. Understand the benefits of Data structures 4. Know the types of Data Structures 	* *	* *			*	
Arrays	<ol style="list-style-type: none"> 1. Understand the Structure of Arrays 2. Understand and Explain Declaration and Memory Allocation of Arrays 		* *				

	3. Develop programs using loops in Arrays			*			
Strings	1. Define Strings and Understand their Usage 2. Use Built-in Functions for Strings 3. Develop Programs using Strings in C and Use some Built in Functions		*	*	*		
Unit # 8 Functions							
	1. Explain the concept and types of function 2. Explain the advantages of using functions 3. Differentiate between Built in and User Defined Functions 4. Explain the signature of function (Name, Arguments, Return type) 5. Explain the following terms related to functions a. Definition of a function b. Call of a function 6. Develop Programs with Functions in C 7. Write following functions using C language and other Examples a. A function which take two integer variables as an argument and return the sum of these variables. b. A function which take three variable and returns median of given number.		*	*		*	
Activity	Develop a detailed Program in C using all constructs taught			*			
Unit # 9 Security, Protection and Smart Sharing							
Security and Protection	1. Explain the following terminology a. Computer Crime b. Security c. Disaster Recovery d. Backup e. Pests		*	*	*	*	*

	<ul style="list-style-type: none"> f. Privacy g. Junk e-mail h. Protecting Children 		*				
Security devices	<ul style="list-style-type: none"> 1. Introduction to biometric devices <ul style="list-style-type: none"> a. Face recognition b. Fingerprint c. Hand geometry d. Iris recognition e. DNA 2. Merits and demerits of advance technologies regarding security 		*				
Smart Sharing	<ul style="list-style-type: none"> 1. What is sharing and smart sharing 2. Understand seven rules of others' information sharing <ul style="list-style-type: none"> a. data protection legislation and human rights law are not barriers to justified information sharing b. Be open and honest with the individual c. Seek advice from other practitioners if you are in any doubt d. Share with informed consent where appropriate e. Consider safety and well-being of others f. Ensure that the information you share is necessary for the purpose g. Keep a record of your decision of information sharing 3. Discuss the sharing Spaces Twiddla (www.twiddla.com), Google Drive (drive.google.com), Edmodo (edmodo.com) 4. Merits and demerits of sharing 5. Utility and Privacy tradeoff 		*		*		