Engineering Design & Problem Solving
At-A-Glance - Lamar CISD

Ongoing Skills Imbedded All Year	**Professional Standards/Employability Skills/Technical Skills**		
	EDPS 1(B): The student will show the ability to cooperate, contribute, and collaborate as a member of a group to achieve a positive collective outcome. EDPS 1(C): The student will present written and oral communication in a clear, concise, and effective manner, including explaining and justifying actions. EDPS 1(D): The student will demonstrate time-management skills in prioritizing tasks, following schedules, and performing goal-relevant activities in a way that produces efficient results. EDPS 2(D): The student will demonstrate the principles of teamwork related to engineering and technology. EDPS 2(K): The student will explore career preparation. EDPS 5(A): The student will master relevant safety tests. EDPS 7(A): The student will demonstrate an understanding of and discuss principles of ideation (brainstorming, etc.). EDPS 7(C): The student will use rational thinking to develop or improve a product. EDPS 7(E): The student will use an engineering notebook to record prototypes, corrections, and/or mistakes in the design process.		
Ongoing Ways to Show	EDPS 7(E): The student will use an engineering notebook to record prototypes, corrections, and/or mistakes in the design process. EDPS 7(F): The student will use an engineering notebook and portfolio to record the final design, construction, and manipulation of finished projects.		
Grading Period	**Unit Name**	**Estimated Time Frame**	**TEKS**
Grading Period 1 28 Days	**Professional Standards/Employability Skills**	**5 Days**	1A, 1B, 1C, 1D, 1E
	EDPS 1(A) The student will demonstrate knowledge of how to dress appropriately, speak politely, and conduct oneself in a manner appropriate for the profession. EDPS 1(B) The student will show the ability to cooperate, contribute, and collaborate as a member of a group in an effort to achieve a positive collective outcome. EDPS 1(C) The student will present written and oral communication in a clear, concise, and effective manner, including explaining and justifying actions. EDPS 1(D) The student will demonstrate time-management skills in prioritizing tasks, following schedules, and performing goal-relevant activities in a way that produces efficient results. EDPS 1(E) The student will demonstrate punctuality, dependability, reliability, and responsibility in performing assigned tasks as directed.		
	Safe & Proper Work Habits	**8 Days**	5A, 5B, 5C, 5D, 5E, 5F, 5G
	EDPS 5(A) The student will master relevant safety tests. EDPS 5(B) The student will comply with safety guidelines as described in various manuals, instructions, and regulations. EDPS 5(C) The student will identify and classify hazardous materials and wastes according to Occupational Safety and Health Administration (OSHA) regulations. EDPS 5(D) The student will dispose of hazardous materials and wastes appropriately. EDPS 5(E) The student will perform maintenance on selected tools, equipment, and machines. EDPS 5(F) The student will handle and store tools and materials correctly. EDPS 5(G) The student will describe the results of negligent or improper maintenance.		
	Team Work	**5 Days**	2D, 2E, 2F
	EDPS 2(D) The student will demonstrate the principles of teamwork related to engineering and technology. EDPS 2(E) The student will identify and use appropriate work habits. EDPS 2(F) The student will demonstrate knowledge related to governmental regulations, including health and safety.		
	Engineering Design Methodologies	**10 Days**	7A, 7B, 7C, 7D, 7E, 7F
	EDPS 7(A) The student will demonstrate an understanding of and discuss principles of ideation (Brainstorming, etc.). EDPS 7(B) The student will demonstrate critical thinking, identify the system constraints, and make fact-based decisions. EDPS 7(C) The student will use rational thinking to develop or improve a product. EDPS 7(D) The student will apply decision-making strategies when developing solutions. EDPS 7(E) The student will use an engineering notebook to record prototypes, corrections, and/or mistakes in the design process. EDPS 7(F) The student will use an engineering notebook and portfolio to record the final design, construction, and manipulation of finished projects.		

Grading Period 2 25 Days	**Team Projects**	**10 Days**	3A, 3B, 3C
	EDPS 3(A) The student will demonstrate an understanding of and discuss how teams function. EDPS 3(B) The student will apply teamwork to solve problems. EDPS 3(C) The student will serve as both a team leader and member and demonstrate appropriate attitudes while participating in team projects.		
	Design Process & Techniques	**15 Days**	9A, 9B, 9C, 9D, 9E
	EDPS 9(A) The student will interpret engineering drawings. EDPS 9(B) The student will identify areas where quality, reliability, and safety can be designed into a product. EDPS 9(C) The student will improve a product design to meet a specified need. EDPS 9(D) The student will produce engineering drawings to industry standards. EDPS 9(E) The student will describe potential patents and the patenting process.		
Grading Period 3 25 Days	**Managing a Project**	**10 Days**	4A, 4B, 4C, 4D
	EDPS 4(A) The student will implement project management methodologies, including initiating, planning, executing, monitoring and controlling, and closing a project. EDPS 4(B) The student will develop a project schedule and complete work according to established criteria. EDPS 4(C) The student will participate in the organization and operation of a real or simulated engineering project. EDPS 4(D) The student will develop a plan for production of an individual product.		
	Concepts of Engineering	**15 Days**	8A, 8B, 8C, 8D
	EDPS 8(A) The student will use a variety of technologies to design components. EDPS 8(B) The student will use tools, laboratory equipment, and precision measuring instruments to develop prototypes. EDPS 8(C) The student will research applications of different types of computer-aided drafting and design software. EDPS 8(D) The student will use multiple software applications for concept presentations.		
Grading Period 4 33 Days	**Virtual Design - CAD**	**33 Days**	6A, 6B, 6C, 6D, 6E, 6F, 6G, 6H, 6I, 6J
	EDPS 6(A) The student will use single and multi-view projections. EDPS 6(B) The student will use orthographic and pictorial views. EDPS 6(C) The student will use auxiliary views. EDPS 6(D) The student will use section views. EDPS 6(E) The student will use advanced construction techniques. EDPS 6(F) The student will prepare and revise annotated multi-dimensional production drawings in computer-aided drafting and design to industry standards. EDPS 6(G) The student will demonstrate knowledge of effective file structure and management. EDPS 6(H) The student will use advanced dimensioning techniques. EDPS 6(I) The student will construct and use basic 3D parametric drawings. EDPS 6(J) The student will develop and use prototype drawings for presentation.		
Grading Period 5 34 Days	**Build Prototype**	**34 Days**	10A, 10B, 10C
	EDPS 10(A) The student will identify and describe the steps needed to produce a prototype. EDPS 10(B) The student will identify and use appropriate tools, equipment, machines, and materials to produce the prototype. EDPS 10(C) The student will present the prototype using a variety of media.		
Grading Period 6 28 Days	**Build Prototype**	**12 Days**	10A, 10B, 10C
	EDPS 10(A) The student will identify and describe the steps needed to produce a prototype. EDPS 10(B) The student will identify and use appropriate tools, equipment, machines, and materials to produce the prototype. EDPS 10(C) The student will present the prototype using a variety of media.		
	Work Place Skills	**16 Days**	2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K
	EDPS 2(A) The student will distinguish the differences between an engineering technician, engineering technologist, and engineer. EDPS 2(B) The student will identify employment and career opportunities. EDPS 2(C) The student will investigate and work toward industry certifications. EDPS 2(D) The student will demonstrate the principles of teamwork related to engineering and technology. EDPS 2(E) The student will identify and use appropriate work habits. EDPS 2(F) The student will demonstrate knowledge related to governmental regulations, including health and safety. EDPS 2(G) The student will discuss ethical issues related to engineering and technology and incorporate proper ethics in submitted projects.		

Lab Safety and Scientific Processes
Readiness Standards
Supporting Standards

	EDPS 2(H) The student will demonstrate respect for diversity in the workplace. EDPS 2(I) The student will demonstrate appropriate actions and identify consequences relating to discrimination, harassment, and inequality. EDPS 2(J) The student will demonstrate effective oral and written communication skills using a variety of software applications and media. EDPS 2(K) The student will explore career preparation.