Course No: D 140

Orange Unified School District

TECHNOLOGY CORE LAB

(Trimester)

GRADE LEVEL: 7 - 8

PREREQUISITES: NONE

INTRODUCTION TO SUBJECT:

Technology Core Lab is designed to provide students with an opportunity to explore the world of technology in a well-planned and modern facility. This program offers the students opportunities to develop their skills, knowledge, problem-solving abilities, work ethic, and attitudes in the areas of technology which are affecting all facets of our society. Students will be introduced to various areas of technology and will be provided opportunities to make decisions and interpret the impacts of technology on society. Through modular activities, group activities, and teacher-led activities, Technology Core Lab provides a balance of theory and practical experience with hands-on activities. This course is highly recommended for all career paths, including: college, tech school, military, and other occupations.

The individual modules include: Audio Communication, Computer Aided Drafting (CAD), Computer Graphics and Animation, Digital Music, Electricity and Electronics, Environment and Ecology, Flight Technology, Health and Fitness, Information Technology, Laser Technology, Materials Processing, Research and Development, Robotics, Structural Engineering, Video Production, Virtual Architecture, Mechanisms, Computer Numerical Control with Lathe and/ Mill, Pneumatics, and Energy and Power.

COURSE OBJECTIVES:

BY THE END OF THE COURSE THE STUDENT WILL BE ABLE TO:

Learn to work cooperatively in groups to solve problems and direct his/her own learning through the use of each student's multiple intelligence.

Students will complete a minimum of three fifteen-day course modules.

COURSE OVERVIEW AND APPROXIMATE UNIT TIME ALLOTMENTS:

		WEEKS
I.	General Orientation and Introduction	1
	A. Course description	
	B. Goals - student/teacher responsibility	
	C. Methods of instruction	
	D. Research - Internet	
	E. Laboratory activities	
	F. Critical writing - twice per module	
	G. Objective examination	
	H. Design briefs - final project	
	I. Equipment	
	J. Safety	
	K. Cleanup	
	L. Assessment	
II.	Audio Communications	3
	A. Equipment	
	B. Broadcasting techniques	
	C. Principles of communication	
	D. Simulated broadcast	
III.	Health and Fitness	3
	A. Human body	
	B. Systolic readings	
	C. Diastolic readings	
	D. Body temperature using infrared technology	
	E. Nutrition and diet	
IV.	CNC Technology Mill	3
	A. Numerical control	
	B. Computer design	
	C. Manufacturing	
	D. Project	
V.	Electricity and Electronics	3
	A. Components	
	B. Ohms Law	
	C. Circuit design	
	D. Transistors/Resistors/Switches	
	E. Systems	
VI.	Computer Graphics and Animation	3
	A. Computer drawing and painting	
	B.	

WEEKS

B. Morphing
C. Animation
D. Digital Video

VII. Digital Music 3
A. Use of synthesizer
B. Keyboard/Controller
C. Produce/Sequence/Edit/Record
D. Music composition

VIII. Laser Technology 3
A. Industrial applications
B. Fiber optics
C. Bending of light
D. Hands-on experiments

IX. Material Processing 3
A. Tools and machines
B. Fractional measuring
C. Dimensional layout
D. Injection molding
E. Equipment safety

X. Mechanisms Technology 3
A. Gears and sprockets
B. Levers and pulleys
C. Friction and reduction
D. Problem solving related to simple machines

XI. Pneumatics Technology 3
A. Industrial uses
B. Build pneumatic circuits
C. Cylinders/Directional Valves/Electric Solenoid
D. Final project

XII. Structural Technology 3
A. Mathematical applications
B. Graphing scientific data
C. Beams/Sections/Stress Panels/Trusses
D. Stress test

XIII. Robotics 3
A. Robotic systems
B. Programming
C. Optical and tactile sensors

WEEKS

D. Industrial applications
E. History of robotics

XIV. Virtual Architecture 3
A. Dwelling design
B. Design specifications
C. Aesthetic designs
D. Interior design and application
E. Landscape design

XV. Energy and Power 3
A. Mechanics tools
B. Conceptual physics of an internal combustion engine
C. Bore and stroke
D. Precision management
E. Ignition and compression testing

XVI. Computer-Aided Drafting 3
A. CAD history
B. Terminology
C. Lab with color plotter
D. Design brief and project

XVII. Video Production 3
A. History of video
B. Components of video editing system
C. Careers aligned with video production
D. Write and develop shooting script
E. Produce newscast and human-interest story

XVIII. Environment and Ecology 3
A. Energy systems
B. Construct solar greenhouse
C. Impact of polluted water
D. Protocol for clean water availability
E. Recycling technology

XIX. Information Technology 3
A. Information processing systems
B. Microsoft Office 97/Tripmaker/Encarta 99
C. Develop multimedia presentation
D. Develop personal Web Page using Frontpage

		WEEKS
XX.	Research and Development	3
	A. Vehicle design	
	B. Transportation technology	
	C. Safety restraint and airbag system testing	
	D. "Crush Zone" engineering and testing for vehicle integrity	

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