# Manufacturing Cluster Sample Education Plan

| | ENGLISH | MATH | SCIENCE | SOCIAL STUDIES | OTHER REQUIRED COURSES | CAREER AND TECHNICAL COURSES | |
|---|---|---|---|---|---|---|---|
| 9TH GRADE | English 9 | Algebra I | Physical Science | World History to the Present | • Physical Education -1<br>• Health – ½<br>• Fine Arts – ½<br>• Computer Application – ½<br>• Foreign Language I<br>• Foreign Language II | • Architecture, Construction & Manufacturing<br>• Industrial Systems and Maintenance I, II, III & IV<br>• Direct Current<br>• Alternating Current<br>• Semiconductors<br>• Digital Electronics<br>• Introduction to Precision Machining<br>• Introduction to Lathe<br>• Intermediate Lathe and Benchwork<br>• Introduction to Milling, Drill Press, and Surface Grinder<br>• Intermediate Mill and Surface Grinder<br>• Electrical Technology<br>• Basic Wiring<br>• Residential Wiring<br>• Industrial Wiring<br>• Commercial Wiring<br>• Motor Control | • Advanced Motor Control<br>• National Electrical Code and Journeyman's Preparation<br>• Electromechanical Controls<br>• Introduction to HVACR<br>• HVACR Maintenance<br>• Introduction to Electricity for HVACR Systems<br>• HVACR Electrical Components and Controls<br>• Refrigerants<br>• Commercial Refrigeration<br>• Heating and Heat Pump Systems<br>• Plumbing and Pipefitting I, II, & III<br>• Safety and Health Regulations<br>• Introduction to Manufacturing<br>• Introduction to Welding<br>• Applied Welding I with Plasma Arc Cutting<br>• Applied Welding II with Carbon Arc Cutting<br>• Welding III - Groove Welds and Inspection<br>• Applied Welding IV - Advanced Groove Welds and Testing<br>• Gas Metal Arc Welding<br>• Flux Cored Arc Welding<br>• Gas Tungsten Arc Welding I & II |
| 10TH GRADE | English 10 | Geometry | Biology | United State History to 1877 | | | |
| 11TH GRADE | English 11 | Algebra II with Trig | Chemistry | United States History from 1877 to the Present | | | |
| 12TH GRADE | English 12 | Pre-Calculus or Statistics | Physics | Economics/ United States Government | | | |
| COMMUNITY COLLEGE | • Cluster/Degree/Certification Course Work | • Cluster/Degree/Certification Course Work | • Cluster/Degree/Certification Course Work | • Cluster/Degree/Certification Course Work | | | |
| HIGHER EDUCATION | • Degree completion requirements | • Degree completion requirements | • Degree completion requirements | • Degree completion requirements | | | |

# Production Pathway