MANUFACTURING CAREER CLUSTER DESIGN

Maintenance Pathway – CIP Code 47.0000

Approved Pathway:

1) Includes minimum of three secondary-level credits.
2) Includes a work-based element.
3) Consists of a sequence: Introductory-level, Technical-level, and Application-level courses.
4) Supporting documentation include Articulation Agreement(s) and a Program of Study.
5) Technical-level and Application-level courses receive .5 state-weighted funding in an approved CTE pathway.

Concentrator Requirement

For a student to be a concentrator, at least 2 of 3 required secondary level credits taken must be a combination of technical and application levels.

INTRODUCTORY LEVEL

Introduction to Industrial Technology	38001	.5 credit
Production Blueprint Reading	21108	.5 credit

TECHNICAL LEVEL

Maintenance Blueprint Reading	39109	.5 credit
Machine Tool Technology Ia	39203	.5 credit
Maintenance Welding Processes	13208	1 credit
Refrigeration Technology	17052	.5 credit
Mech. Power Transmission & Conveyor Sys.	13302	.5 credit

APPLICATION LEVEL

Remodeling & Building Maintenance	17009	.5 credit
Sheet Metal Technology	13205	.5 credit
HVAC Technology	17056	.5 credit
Plumbing Technology	17058	.5 credit
Electrical & Security Systems	17113	.5 credit
**Hydraulics & Pneumatics	39302	.5 credit
Work-Based Maintenance Experience	13348	.5 credit

**Has a Pre-requisite course.

ALL ONE CREDIT COURSES MAY BE TAUGHT AS TWO .5 CREDIT COURSES.

KANSAS STATE CAREER CLUSTER COMPETENCY PROFILE

MANUFACTURING CLUSTER

MAINTENANCE PATHWAY (C.I.P. 47.0000)

STUDENT_____

Rating Scale:

4 - Exemplary Achievement
3 - Proficient Achievement
2 - Limited Achievement
1 - Inadequate Achievement
0 - No Exposure

Graduation Date _____

I certify that the student has received training in the areas indicated.

Instructor Signature _____

Instructor Signature _____

Instructor Signature _____

Instructor Signature _____

38001-INTRODUCTION TO INDUSTRIAL TECHNOLOGY (.5 Credit) An introductory level course designed to instruct students in the basic skills necessary to all occupations in the Construction, Manufacturing & Transportation areas.

4 3 2 1 0 1. **Basic Safety**

-Identify causes of accidents and the impact of accident costs.
- Follow safe behavior procedures on and around ladders, scaffolds and stairs.
-Follow safe behavior procedures around electrical hazards.
-Demonstrate the use, care and inspection of appropriate personal protective equipment (PPE)
-Explain the importance of hazard communications (HazCom) and material safety data sheets (MSDSs).
-Respond to hazardous-materials and hazardous-waste emergency situations in accordance with regulatory requirements.
- Follow safety procedures required for lifting heavy objects.
-Demonstrate a working knowledge of safety education, environment, and enforcement for life and work.
- Apply safe practices while using tools and equipment.
-Apply safe practices for housekeeping, dress, fire, chemicals & personal protection while working in a shop.
-Describe fire prevention and firefighting techniques.
-Explain the purpose of OSHA and how it promotes safety on the job.

4 3 2 1 0 2. **Industrial Math**

-Add, subtract, multiply, and divide whole numbers, fractions, decimals and percentages.
-Use a standard ruler, a metric ruler, and a measuring tape to measure.
-Demonstrate conversion skills for decimals and fractions.
-Recognize and perform calculations using metric units of length, weight, volume and temperature.

4 3 2 1 0 3. **Hand Tools**

-Recognize and identify some of the basic hand tools and their proper uses in industrial trades.
-Demonstrate the safe use of common hand tools.

4 3 2 1 0 4. **Power Tools**

-Recognize and identify some of the basic power tools and their proper uses in the industrial trades.
-Demonstrate the safe use of common power tools.
-Perform preventive maintenance on basic power tools used in the industrial trades.

4 3 2 1 0 5. **Blueprint Reading**

-Perform the drafting principles needed to draw the basic geometric shapes.
-Develop a pictorial sketch of an object.
-Develop a multi-view drawing.
-Identify basic symbols used in blueprints.
-Identify various types of blueprint views used in Architecture, Construction, Manufacturing and Engineering.

4 3 2 1 0 6. **Communication Skills**

-Interpret information and follow instructions presented in both verbal and written form.
-Communicate effectively in on-the-job situations using verbal and written skills in various delivery modes (face-to-face, paper, & electronic).

-Create and complete various written documents used in industrial trades.
-Demonstrate knowledge and use of computer systems and word processing software in effective communication.

4 3 2 1 0 7. **Employability Skills**
-Create and utilize employment documents including a resume and portfolio.
-Demonstrate job seeking and interview skills.
-Understand and respond to performance reviews.

4 3 2 1 0 8. **21st Century/Foundation Skills**
-Demonstrate critical thinking skills and the ability to solve problems using those skills.
-Define effective relationship skills.
-Demonstrate a working knowledge of workplace issues such as sexual harassment, stress, and substance abuse.
-Demonstrate the ability to achieve common goals through team work

4 3 2 1 0 8. **Materials Handling**
-Verify that health, safety, environmental and government regulations are met.
-Recognize hazards and follow safety procedures required for materials handling.
-Demonstrate ability to load and unload materials properly and safely.

21108- PRODUCTION BLUEPRINT READING (.5 Credit) An introductory level course to introduce students to the various types of blueprints utilized in the manufacturing industry.

4 3 2 1 0 1. Identify symbols associated with blueprints
4 3 2 1 0 2. Interpret work from multiview drawings
4 3 2 1 0 3. Interpret size and location of features
4 3 2 1 0 4. Visualizing shapes and objects in multiple views
4 3 2 1 0 5. Ability to convert fractions and decimals proficiently
4 3 2 1 0 6. Interpret inch and metric drawings
4 3 2 1 0 7. Demonstrate legend and note reading skills
4 3 2 1 0 8. Interpret basic geometric dimensioning and tolerancing terminology
4 3 2 1 0 9. Identify different views utilized in blueprint reading
4 3 2 1 0 10. Identify orthographic projection such as lines and symbols for electrical, piping, mechanical, architectural, welding, and machining prints

39109- MAINTENANCE BLUEPRINT READING (.5 Credit) A technical level course designed to provide students with the knowledge and skills to interpret the variety of drawings used in maintenance occupations including: blueprints, schematics, flow diagrams, and other trade prints. (Cannot be the only technical level course taught in the pathway.)

4 3 2 1 0 1. Identify and describe types of prints and drawings used for maintenance applications in manufacturing to include engineering (mechanical and civil), architectural, and schematic representations.
4 3 2 1 0 2. Identify and interpret symbology specific to a variety of trade prints such as electrical, plumbing and pipefitting, mechanical and electrical control, power distribution, process and instrumentation, and process flow diagrams.
4 3 2 1 0 3. Read and interpret various drawings used in manufacturing, commercial, and industrial maintenance, to include Mechanical drawings using orthographic projection, electrical schematics, plumbing/piping ISOs, piping and instrumentation diagrams, architectural and civil.
4 3 2 1 0 4. Select appropriate prints necessary to complete a maintenance operation or diagnostic application.

39203- MACHINE TOOL TECHNOLOGY Ia (.5 Credit) A comprehensive, technical level course designed to provide students with the basic theories, equipment usage and skills needed to perform machining tasks.

4 3 2 1 0 1. Perform Bench work and Layout Operations
4 3 2 1 0 2. Demonstrate Precision Measuring
4 3 2 1 0 3. Perform Layout Operations
4 3 2 1 0 4. Operate Drilling Machines
4 3 2 1 0 5. Operate Manual Lathes
4 3 2 1 0 6. Operate Manual Milling Machines
4 3 2 1 0 7. Operate Grinding tools and Equipment
4 3 2 1 0 8. Interpret Blueprint Drawing
4 3 2 1 0 9. Use Metric and English standards of Measurement
4 3 2 1 0 10. Demonstrate the Use of Hand tools.
4 3 2 1 0 11. Cut threads with taps and dies
4 3 2 1 0 12. Identify Tap Drill sizes

13208- MAINTENANCE WELDING PROCESSES (1 Credit) A technical level course designed to provide students with the knowledge and skills to perform maintenance welding procedures including braze and torch welding and common pipe joint welding.

4 3 2 1 0 1. Identify safe practices and safety and health issues and procedures
4 3 2 1 0 2. Describe metallurgy and identify metals
4 3 2 1 0 3. Demonstrate proper use of personal protective equipment and safe work habits
4 3 2 1 0 4. Make welds using the oxyfuel process
4 3 2 1 0 5. Braze weld carbon steel
4 3 2 1 0 6. Braze weld cast iron

4 3 2 1 0 7. Perform torch soldering operations on a variety of materials
4 3 2 1 0 8. Manually operate an oxyfuel torch to cut carbon steel structural materials of varying thicknesses
4 3 2 1 0 9. Plasma cut materials in shapes, bevels, and straight lines
4 3 2 1 0 10. Demonstrate safe set up of welding equipment
4 3 2 1 0 11. Weld joints in the F and H positions using a fast freeze electrode
4 3 2 1 0 12. Weld joints in the F and H positions using a low hydrogen electrode
4 3 2 1 0 13. Weld joints in the F and H positions using GMAW carbon steel
4 3 2 1 0 14. Weld joints in the F and H positions using GTAW carbon steel
4 3 2 1 0 15. Weld common pipe joints using SMAW, GMAW, and GTAW processes
4 3 2 1 0 16. Layout and weld a project from a print

13205 – SHEET METAL TECHNOLOGY (.5 Credit) A technical level course designed to provide students with the knowledge and skills to layout and fabricate items created from sheet metal components.

4 3 2 1 0 1. Safely utilize and maintain tools common to the sheet metal trade.
4 3 2 1 0 2. Demonstrate blueprint reading skills including the interpretation of plans, elevations, schedules, and details.
4 3 2 1 0 3. Identify the three basic types of layout: parallel line, radial line, and triangulation.
4 3 2 1 0 4. Layout and fabricate a basic joint of ductwork, including seams and transverse joints.
4 3 2 1 0 5. Utilize a tape measure to obtain correct measurements for a ductwork detail.
4 3 2 1 0 6. Describe types and thicknesses of sheet metal.
4 3 2 1 0 7. Layout and fabricate basic sheet metal fittings.
4 3 2 1 0 8. Describe the different seams commonly used for ductwork and explain the advantages of each.

17052– REFRIGERATION TECHNOLOGY (.5 Credit) A technical level course designed to provide students with training in the theories, equipment and skills needed to install and maintain refrigeration systems.

4 3 2 1 0 1. Demonstrate proper use of hand and power tools used in the refrigeration trade.
4 3 2 1 0 2. Demonstrate proper safety procedures within the refrigeration trade.
4 3 2 1 0 3. Correctly measure, cut, ream, and join copper and/or plastic pipe and tubing.
4 3 2 1 0 4. Identify the different types of copper tubing and characteristics of each type.
4 3 2 1 0 5. Explain the basic principles of a refrigeration system.
4 3 2 1 0 6. Identify and describe the major components of a refrigeration system and the roles they take in the refrigeration process.
4 3 2 1 0 7. Demonstrate how to read a basic schematic drawing and the basic symbols.
4 3 2 1 0 8. Compare and contrast different types of refrigeration systems.

17009- REMODEL & BUILDING MAINTENANCE (.5 Credit) A technical level course designed to provide students with knowledge & skills needed to perform remodeling & maintenance procedures for wall, floor, window, door, electrical, HVAC, and plumbing, applications.

4 3 2 1 0 1. Apply needed caulking and/or paint to interior and exterior finishes.
4 3 2 1 0 2. Demonstrate ability to repair/replace damaged wallboard, wood trim and cabinetry.
4 3 2 1 0 3. Utilize knowledge of bearing walls when reconfiguring room design and/or constructing building additions.
4 3 2 1 0 4. Repair/replace floor coverings.
4 3 2 1 0 5. Troubleshoot and repair problems with HVAC systems.
4 3 2 1 0 6. Troubleshoot and repair water supply, water heater, and water drainage problems.
4 3 2 1 0 7. Troubleshoot and repair problems in lighting fixtures, including ballast replacement.
4 3 2 1 0 8. Utilize appropriate meters/tools to locate electrical circuit problems.
4 3 2 1 0 9. Replace breakers, plugs, switches and light fixtures.
4 3 2 1 0 10. Repair/Replace windows, storm windows, doors and storm doors.
4 3 2 1 0 11. Install and perform maintenance procedures on electric motors.
4 3 2 1 0 12. Evaluate and assess the extent and condition of remodeling/maintenance problems.
4 3 2 1 0 13. Develop a checklist to track preventative maintenance.
4 3 2 1 0 14.

13302- MECHANICAL POWER TRANSMISION AND CONVEYOR SYSTEMS (.5 credit) A technical level course designed to provide students with knowledge and skills needed to adjust, maintain, and repair parts of machinery and equipment. Includes hydraulics, pneumatics, gears, belt & chain drives, motors and bearings.

4 3 2 1 0 1. Demonstrate working knowledge of gears and gear drives
4 3 2 1 0 2. Calculate gear ratios
4 3 2 1 0 3. Apply working knowledge of hydraulic and pneumatic power

4 3 2 1 0 4. Calculate pressures and forces associated with hydraulic and pneumatic power
4 3 2 1 0 5. Incorporate application knowledge of linear motion concepts
4 3 2 1 0 6. Apply working knowledge of belt and belt drives
4 3 2 1 0 7. Utilize knowledge of ratings of motors
4 3 2 1 0 8. Identify and size for replacement various types of bearings and bushings
4 3 2 1 0 9. Apply working knowledge of chain and chain drives
4 3 2 1 0 10. Demonstrate application knowledge of adjustable variable speed drives
4 3 2 1 0 11. Troubleshoot various controls
4 3 2 1 0 12. Demonstrate working knowledge of couplings and U Joints
4 3 2 1 0 13. Demonstrate conceptual knowledge of the following predictive maintenance technologies: vibration analysis, infrared thermography, oil analysis, ultrasonic thickness measurement, passive ultrasonic leak detection
4 3 2 1 0 14. Describe common applications for the following predictive maintenance technologies: vibration analysis, infrared thermography, oil analysis, ultrasonic thickness measurement, passive ultrasonic leak detection

17056 – HVAC TECHNOLOGY (.5 Credit) (Recommend this course be taught following the 13205 Sheet Metal &/or the 17052 Refrigeration course) An application level course designed to provide students with training in the theories, equipment and skills needed to install, troubleshoot and maintain HVAC systems.

4 3 2 1 0 1. Safely utilize and maintain tools common to the mechanical trades industry.
4 3 2 1 0 2. Describe the heating and cooling process.
4 3 2 1 0 3. Demonstrate the use of a duct calculator and the formulas used to calculate heat loads.
4 3 2 1 0 4. Apply layout to HVAC projects.
4 3 2 1 0 5. Describe various types of heating and cooling systems, including the pros, cons and applications of each.
4 3 2 1 0 6. Demonstrate basic electrical knowledge of how electrical circuits work and how they are used within the industry.
4 3 2 1 0 7. Install basic and programmable heat/cool thermostats.
4 3 2 1 0 8. Describe thermostat wire and identify what each color should be used for.
4 3 2 1 0 9. Research future trends in "green technology" for the HVAC industry.
4 3 2 1 0 10. Troubleshoot and repair problems with HVAC systems.
4 3 2 1 0 11. Correctly measure, cut and join piping/tubing.
4 3 2 1 0 12. Demonstrate proper soldering techniques.
4 3 2 1 0 13. Demonstrate ability to maintain appropriate maintenance documentation.

17058– PLUMBING TECHNOLOGY (.5 Credit) (Recommend this course be taught following the 17009 Remodeling & Building Maintenance course.) An application level course designed to provide students with training in the theories, equipment and skills needed to install, troubleshoot and maintain plumbing systems.

4 3 2 1 0 1. Demonstrate proper use of basic hand and power tools used in the plumbing trade.
4 3 2 1 0 2. Correctly measure, cut and join plastic, carbon steel and/or stainless steel piping/tubing.
4 3 2 1 0 3. Identify and install the most common types of sinks and toilets.
4 3 2 1 0 4. Identify and describe the functions of the major components of a water distribution system.
4 3 2 1 0 5. Identify and install pipe hangers and supports.
4 3 2 1 0 6. Identify the types of schedules and drawings used within the plumbing trade.
4 3 2 1 0 7. Demonstrate proper soldering techniques.
4 3 2 1 0 8. Identify different types of plumbing systems and their components.
4 3 2 1 0 9. Demonstrate proper safety procedures within the plumbing trade.
4 3 2 1 0 10. Troubleshoot and repair water supply, water heater, and water drainage problems.

17113- ELECTRICAL & SECURITY SYSTEMS (.5 Credit) An application level course designed to provide students with the knowledge and skills needed to install, troubleshoot and maintain electrical and security systems. (Recommend students take 17009 prior to this course.)

4 3 2 1 0 1. Cut, ream, thread and bend conduit.
4 3 2 1 0 2. Compute branch circuit loads and explain installation requirements.
4 3 2 1 0 3. Demonstrate the procedure for safely using a clamp-on ammeter and a voltage tester.
4 3 2 1 0 4. Demonstrate procedures for installing raceways and boxes.
4 3 2 1 0 5. Demonstrate ability to correctly pull wire through conduit.
4 3 2 1 0 6. Select and install appropriate service entrance equipment according to codes.

4 3 2 1 0 7. Demonstrate the ability to properly ground electrical circuits according to codes.
4 3 2 1 0 8. Install breakers, plugs and switches.
4 3 2 1 0 9. Explain basic characteristics of series and parallel circuits.
4 3 2 1 0 10. Recognize and install various types of lighting fixtures.
4 3 2 1 0 11. Describe characteristics and functions of various fire alarm systems.
4 3 2 1 0 12. Describe characteristics and functions of various security and burglar alarm systems.
4 3 2 1 0 13. Describe the uses, characteristics and theory of low voltage systems.
4 3 2 1 0 14. Demonstrate knowledge of the uses and installation process for Closed Circuit TV.
4 3 2 1 0 15. Describe the components of and uses for electric lock hardware.
4 3 2 1 0 16. Demonstrate safe use of electric hand and power tools.
4 3 2 1 0 17. Understand and interact with LAN systems as a part of an overall security installation.
4 3 2 1 0 18. Demonstrate ability to install a lightning protection system.
4 3 2 1 0 19. Troubleshoot and repair problems in lighting fixtures, including ballast replacement.

39302- HYDRAULICS & PNEUMATICS (.5 credit) (Recommend students to take 13302 Mechanical Power Transmission & Conveyor Systems prior to this course) An application level course designed to provide students with advanced knowledge and skills in operating, maintaining and troubleshooting hydraulic & pneumatic systems.

4 3 2 1 0 1. Compare & contrast the principles of hydraulics & pneumatics.
4 3 2 1 0 2. Demonstrate a working knowledge of hydraulics & pneumatics terminology.
4 3 2 1 0 3. Identify basic hydraulic and pneumatic symbols.
4 3 2 1 0 4. Read and understand Schematic Diagrams
4 3 2 1 0 5. Design and construct basic hydraulic and pneumatic circuits
4 3 2 1 0 6. Demonstrate proper use of pneumatic and hydraulic-operated Tools
4 3 2 1 0 7. Explain the operation of air compressors and vacuum pumps
4 3 2 1 0 8. Perform diagnostic procedures on hydraulic and pneumatic systems
4 3 2 1 0 9. Compare & contrast the use of synthetic and petroleum-based lubricants in hydraulic systems
4 3 2 1 0 10. Create a comprehensive maintenance schedule for hydraulic & pneumatic systems
4 3 2 1 0 11. Identify components in a fluid power/pneumatic circuit

13348- WORK-BASED MAINTENANCE EXPERIENCE (.5Credit) Senior level application course that incorporates experienced-based learning including OJT, or Internships. (Must be preceded by at least one credit of technical level courses)

4 3 2 1 0 1. Work with a client to develop a client-driven product or perform maintenance tasks.
4 3 2 1 0 2. Demonstrate ability to access and utilize industry resources
4 3 2 1 0 3. Use appropriate grammar and word usage in the creation and implementation of a formal graphic presentation using current standards and technology
4 3 2 1 0 4. Utilize effective time management techniques to organize work flow
4 3 2 1 0 5. Research new technologies to meet future client needs
4 3 2 1 0 6. Demonstrate abilities in problem solving in manufacturing maintenance.
4 3 2 1 0 7. Demonstrate an awareness of current maintenance standards & methodologies
4 3 2 1 0 8. Demonstrate ability to incorporate industry specific codes in maintenance operations.
4 3 2 1 0 9. Demonstrate ability to set and work within defined budget
4 3 2 1 0 10. Manipulate materials and processes to meet client needs
4 3 2 1 0 11. Demonstrate ability to manage and set project goals and timelines
4 3 2 1 0 12. Utilize job seeking skills including resume writing and interviewing skills.
4 3 2 1 0 13. Apply maintenance skills to work situations.

THE FOLLOWING ARE NOT STAND-ALONE COURSES. THEY ARE SKILLS TO BE EMBEDDED IN ALL COURSES.

WORKPLACE SAFETY SKILLS (Embedded in all Core CTE Courses)

4 3 2 1 0 1. Demonstrate a working knowledge of safety education, environment, and enforcement for life and work.
4 3 2 1 0 2. Apply safe practices while using tools and equipment to construct a project.
4 3 2 1 0 3. Apply safe practices for housekeeping, dress, fire, chemicals & personal protection while working in a shop.
4 3 2 1 0 4. Demonstrate the use and care of appropriate personal protective equipment (PPE).
4 3 2 1 0 5. Explain the importance of Hazard Communications (HazCom) and Material Safety Data Sheets (MSDS)

4 3 2 1 0 6. Describe fire prevention and firefighting techniques.
4 3 2 1 0 7. Follow safety procedures required for lifting heavy objects.
4 3 2 1 0 8. Follow safe behavior procedures on and around ladders and scaffolds.
4 3 2 1 0 9. Explain the purpose of OSHA and how it promotes safety on the job.
4 3 2 1 0 10. Respond to hazardous-materials and hazardous-waste emergency situations in accordance with regulatory requirements.

LEADERSHIP/21ST CENTURY SKILLS (Embedded in all Core CTE Courses)

4 3 2 1 0 1. Demonstrates speaking skills
4 3 2 1 0 2. Utilizes listening skills
4 3 2 1 0 3. Uses writing skills to produce and compile documents
4 3 2 1 0 4. Uses decision making / problem solving skills
4 3 2 1 0 5. Participates as team member to achieve common goals
4 3 2 1 0 6. Demonstrates time management
4 3 2 1 0 7. Takes responsibility and displays work ethics
4 3 2 1 0 8. Establishes positive relations with others
4 3 2 1 0 9. Demonstrate a working knowledge of workplace issues such as sexual harassment, stress, and substance abuse.

CAREER DEVELOPMENT SKILLS (Embedded in all Core CTE Courses)

4 3 2 1 0 1. Utilizes effective job seeking skills
4 3 2 1 0 2. Created and utilizes an occupationally specific resume
4 3 2 1 0 3. Created and utilizes a portfolio
4 3 2 1 0 4. Understands proper interview techniques
4 3 2 1 0 5. Understands performance reviews
4 3 2 1 0 6. Explain the manufacturing industry, the role of companies within the industry, and the role of individual professionals in the industry.
4 3 2 1 0 7. Demonstrate the value of computers in the manufacturing industry through use of email, databases, Internet and billing/inventory software.

ACADEMIC SKILLS (Embedded in all Core CTE Courses)

4 3 2 1 0 1. Apply the four basic math functions to whole numbers, decimals, percentages and fractions.
4 3 2 1 0 2. Use a standard ruler and a metric ruler to measure.
4 3 2 1 0 3. Explain the importance of the metric system in the construction trade and utilize metric units of length, weight, volume and temperature.
4 3 2 1 0 4. Recognize the basic shapes used in the construction industry, and apply basic geometry to measure them.
4 3 2 1 0 5. Demonstrate the ability to interpret information and instructions in both written and verbal form.
4 3 2 1 0 6. Demonstrate the ability to communicate effectively in on-the-job situations using verbal and written skills.
4 3 2 1 0 7. Perform physics skills to work with materials and load applications.

OCCUPATIONAL PROFILE RATING SCALE RUBRIC

Rating Scale (Occupational Profile)

4 - Exemplary Achievement:	Student possesses outstanding knowledge, skills or professional attitude. Works Independently.
3 - Proficient Achievement:	Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.
2 - Limited Achievement:	Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.
1 - Inadequate Achievement:	Student lacks knowledge, skills or professional attitude.
0 - No Instruction / Training:	Student has not received instruction or training in this area.