

SYLLABUS
INDUSTRIAL EQUIPMENT MAINTENANCE
RALPH R. WILLIS CAREER AND TECHNICAL CENTER

INSTRUCTOR: Jerry Frye

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OFFICE HOURS: 11:30 a.m. – 12:00 p.m. | 2:30 p.m. – 3:00 p.m.

COURSES:

- 1871 Electrical Maintenance
- 1873 Fundamentals of Industrial Equipment Maintenance
- 1875 Hydraulic and Pneumatic Systems
- 1985 Fundamentals of Welding Technology

ELECTIVE COURSES:

- 1765 - Industrial and Commercial Wiring
- 1771 - Rotating Devices and Control Circuitry
- 1903 - Fundamentals of Machine Tool Technology

COURSE PHILOSOPHY

The Industrial Equipment Maintenance Department's philosophy is to provide and educate students in as many aspects of the Industrial Equipment Maintenance industry as possible and to provide them the opportunities to become skilled, successful citizens of the global community. The instructor is committed in providing a safe, industry-standard learning environment that promotes commitment, teamwork, communication skills, strong work ethic and responsibility. Students are encouraged to pursue work in a related field, continuous education and industry related training upon successful graduation from the department. During the senior year SkillsUSA competitions and championships reward students for excellence and keep training relevant to employers' needs. An important part of the program is the PORTFOLIO. It provides students an experience that actively engages students in reflective exploration of self and to help students to make a smooth transition from high school to their post high school experience with resume development and interview skills.

The goal of this program is not only to produce skilled Industrial Equipment Maintenance workers who are ready to complete the various FCAW, GMAW, SMAW and GTAW welding exams, and skills with the lathe, but to give students the ability to adapt their talents to the ever-changing technologies in the job market.

PROGRAM OF STUDY DESCRIPTION:

The Industrial Equipment Maintenance Program of Study focuses on careers that will build a knowledge base and technical skills in all aspects of the Industrial Equipment Maintenance industry. Students will have the opportunity to be to develop positive work ethic skills.

COURSE DESCRIPTIONS:

○ **1871 ELECTRICAL MAINTENANCE**

This course introduces the student to the knowledge base and technical skills for entry level skills in industrial Electrical Maintenance. Areas of study include basic electrical theory and calculations, electrical tools, instruments and safety, electrical symbols and diagrams, industrial power and control circuits, electrical equipment and devices, electrical motors, and an introduction to programmable logic controllers, as applied in industrial locations. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

○ **1873 FUNDAMENTALS OF INDUSTRIAL EQUIPMENT MAINTENANCE**

This course introduces the student to the knowledge base and technical skills for entry level skills in Industrial Maintenance. Areas of study include workplace safety, measurement and calculation, tools, fasteners, lubrication and bearings, mechanical and belt drives, and mechanical alignment and vibration. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

○ **1875 HYDRAULIC AND PNEUMATIC SYSTEMS**

This course introduces the student to the knowledge base and technical skills related to industrial Hydraulic and Pneumatic Systems. Areas of study include hydraulic principles, practical application of hydraulic systems, pneumatic principles, and practical application of pneumatic systems. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged

to become active members of the student organizations, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

○ **1985 FUNDAMENTALS OF WELDING TECHNOLOGY**

This course introduces the student to the knowledge base and technical skills for all courses in Welding Technology. Areas of study include career opportunities in welding, welding terms and processes, oxyfuel cutting, lab, and equipment safety. Safety instruction is integrated into all activities. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

○ **1765 INDUSTRIAL AND COMMERCIAL WIRING**

This course introduces the student to the knowledge base and technical skills for Industrial and Commercial Wiring. Areas of study include conduit and raceways and commercial load calculations and configurations. Emphasis will be placed on career exploration, job seeking skills and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts and teachers should provide each student with real world learning opportunities and instruction related to course concepts.

○ **1771 ROTATING DEVICES AND CONTROL CIRCUITRY**

This course introduces the student to the knowledge base and technical skills for concepts in the Rotating Devices and Control Circuitry. Areas of study include control circuitry and motor controls. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts, and teachers should provide each student with real world learning opportunities and instruction related to course concepts.

○ **1903 FUNDAMENTALS OF MACHINE TOOL TECHNOLOGY**

This course introduces the student to the knowledge base and technical skills for all courses in the Machine Tool Technology Program of Study. Areas of study include career exploration, measuring skills and techniques, interpreting blueprints, basic hand tools, filing and grinding, basic band saw, basic drill press, basic metal lathe, and basic milling machine operations and procedures. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in

laboratory activities to develop an understanding of course concepts, and teachers should provide each student with real world learning opportunities and instruction related to Machine Tool Technology.

COURSE ASSESSMENT PLAN

Students are assessed in a variety of ways. Each student is assessed on attendance and participation on a daily basis. There is also a weekly assessment based on quantity of work, quality of work, effort and problem solving ability. (Please see grading criteria). WIN testing is a computer-based program that measures basic skills for the workplace and is used in the current job market and the WV Workforce Investment program. The Portfolio Project product is graded for its adherence to the rubric as well as for the quality of workmanship. The project is graded by both the instructor and business representatives from the field. Report cards are issued quarterly and serve as a guideline for students and parents to measure achievement. Parents are encouraged to contact instructors to ensure a continuing participation in student progress. Parents can visit the Ralph R. Willis website found on the Logan County website and locate more information and instructor contact info. Progress reports are issued three times a year in the middle of each quarter to provide students and parents a timely update on progress and achievement. Live Grades is a useful tool for both parents and students to monitor progress. Please contact administration if you have questions about accessing Live Grades.

GRADING SCALE

100 – 90 = A

89 – 80 = B

79 – 70 = C

69 – 60 = D

59 – 0 = F

GRADING POLICY

Students will be graded on the following: weekly performance and participation, competency of skill, quantity of work, quality of work, and WIN testing, portfolio.

TIMELINE FOR PROGRAM ACTIVITIES

GRADE 11-12

- First Quarter: Safety and Simulated Workplace Introductions and Testing; Work projects as appropriate; Portfolio Development (Juniors and Seniors) and WIN for Seniors. Approved projects may begin with teaching and mentoring of exploratory students.
- Second Quarter: Skills USA, Portfolio Development and Senior WIN Testing. Projects will follow Skill Set Checklists provided by the WVDE.
- Third Quarter: Portfolio Development; various projects and testing according to Skill Sets. Junior WIN testing.

- Fourth Quarter: Senior Portfolio Completion. Junior Portfolio Development. Skill Set Checklists from WVDE to ensure following standards and guidelines. Certification testing for Seniors and Juniors on various welding technologies. Junior WIN Testing.

SKILL SETS LINKS

All skill sets can be found on the WVDE website. Use the link below and click on Programs of Study on the left hand side of the menu.

<https://wvde.us/technical-education/curriculum-and-industry-credentials/>

NON-DISCRIMINATION POLICY

Ralph R. Willis Career and Technical Center is an Equal Opportunity/Affirmative Action Institution. Ralph R. Willis Career and Technical Center does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, national origin, or limited English proficiency in its programs or activities. It complies with the requirements of Title IX of the Education Amendments of 1972, Title VI of the Civil Rights Act of 1964, and Section 504 of the Rehabilitation Act of 1973.

Inquiries regarding Title IX may be made to Elizabeth Thompson: Personnel Director at 506 Holly Ave., P.O. Box 477, Logan, WV 25601, (304) 792-2058, email: ethompso@k12.wv.us.

Inquiries regarding Section 504 may be made to Jill Barker Special Education Director at 506 Holly Avenue, P.O. Box 477, Logan, WV 25601, Dehue office (304) 752-1341 or (304) 792-2056, email: jillbarker@k12.wv.us.