

SYLLABUS
MACHINE TOOL TECHNOLOGY
RALPH R. WILLIS CAREER AND TECHNICAL CENTER

INSTRUCTOR: Jack Frye

PHONE: 304-752-4687, Ext. 2238

EMAIL: jackie.frye@k12.wv.us

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

COURSES:

- 1903 - Fundamentals of Machine Tool Technology
- 1905 - Fundamentals of Machine Processes
- 1907 - Machine Tool Operations
- 1909 - Metal Trades Processes and Applications

ELECTIVE COURSES:

- 1902 - Machine Tool Technology
- 1904 - Integrated Machine Processes
- 1908 - CNC Machining

COURSE PHILOSOPHY

The Machine Tool Technology Department's philosophy is to provide and educate students in as many aspects of the machine trade 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 CNC operators, programmers and precision machinists, but to give students the ability to adapt their talents to the ever-changing technologies in the manufacturing world.

PROGRAM OF STUDY DESCRIPTION:

The Machine Tool Technology Program of Study focuses on careers that will build a knowledge base and technical skills in all aspects of the Machine Tool Technology industry. Students will have the opportunity to earn NIMS certifications that are applicable to the trade.

COURSE DESCRIPTIONS:

○ 1903 FUNDAMENTALS OF MACHINE TOOL TECHNOLOGY

This course introduces the student to the knowledge base and technical skills of the Machine Tool Technology industry. In the Fundamentals of Machine Tool Technology class areas of study include hydraulic principles, practical application of hydraulic systems, pneumatic principles, and practical application of pneumatic systems. 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.

○ 1905 FUNDAMENTALS OF MACHINE PROCESSES

Fundamentals of Machine Processes will continue to build student skills in areas such as intermediate hand tools, power tools, measuring tools, vertical band saw, surface grinding, metal lathe operations, and milling machine operations. 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.

○ 1907 MACHINE TOOL OPERATIONS

This course introduces the student to the knowledge base and technical skills for concepts in Machine Tool Operations. Areas of study include grinding techniques, lathe operations, milling operations, and CNC machining. 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.

○ 1909 METAL TRADES PROCESSES AND APPLICATIONS

Metal Trades Processes and Applications will continue to build student skills in areas of

power saw operations, metal lathe operations, milling machine operations, and CNC machining operations. 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.

- **1902 MACHINE TOOL TECHNOLOGY**

The Skill Sets in this course are representative of the basic knowledge included in a Career and Technical Machine Tool Technology Program of Study. Incorporated into this course are elements of advanced measuring, drill press, metal lathe, and milling machine operations skills necessary for a career in machine tool technology. This course is recommended as an Elective in Machine Tool Technology.

- **1904 INTEGRATED MACHINE PROCESSES**

The Skill Sets in this course are representative of the basic knowledge included in a Career and Technical Machine Tool Technology Program of Study. Incorporated into this course are elements of measuring, metal lathe, and milling operations necessary for a career in machine tool technology. This course is recommended as an Elective in Machine Tool Technology.

- **1908 CNC MACHINING**

The Skill Sets in this course are representative of the basic knowledge included in a Career and Technical Machine Tool Technology Program of Study. Incorporated into this course are elements of advanced machining operations and program creation skills necessary for a career in machine tool technology. This course is recommended as an Elective in 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 machine 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 and WIN for Seniors. Approved project production may begin Teaching and mentoring of exploratory students. NIMS (National Institute of Machine Standards) guidelines.
- **Second Quarter:** Skills USA, Portfolio Development and Senior WIN Testing. Projects will follow Skill Set Checklists provided by the WVDE. NIMS guidelines.
- **Third Quarter:** Portfolio Development; various projects and testing according to Skill Sets. NIMS guidelines (if senior project is completed) Junior WIN testing.
- **Fourth Quarter:** Senior Portfolio Completion. Junior Portfolio Development. NIMS guidelines (if senior project is completed) Skill Set Checklists from WVDE to ensure following standards and guidelines.

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.