

Ag Power Structured Tech Systems

ACADEMIC SKILLS

AA SPEAKING AND LISTENING

AA1 Utilize effective verbal and non-verbal communication skills

AA2 Participate in conversation, discussion, and group presentations

AA3 Communicate and follow directions/procedures

AA4 Communicate effectively with customers and co-workers

AB READING AND WRITING

AB1 Locate and interpret written information

AB2 Read and interpret workplace documents

AB3 Identify relevant details, facts, and specifications

AB4 Record information accurately and completely

AB5 Demonstrate competence in organizing, writing, and editing using correct vocabulary, spelling, grammar, and punctuation

AB6 Demonstrate the ability to write clearly and concisely using industry specific terminology

AC CRITICAL THINKING AND PROBLEM SOLVING

AC1 Utilize critical-thinking skills to determine best options/outcomes (e.g., analyze reliable/unreliable sources of information, use previous experiences, implement crisis management, develop contingency planning)

AC2 Utilize innovation and problem-solving skills to arrive at the best solution for current situation

AC3 Implement effective decision-making skills

AD MATHEMATICS

AD1 Perform basic and higher level math operations (e.g., addition, subtraction, multiplication, division, decimals, fractions, units of conversion, averaging, percentage, proportion, ratios)

AD2 Solve problems using measurement skills (e.g., distance, weight, area, volume)

AD3 Make reasonable estimates

AD4 Use tables, graphs, diagrams, and charts to obtain or convey information

AD5 Use deductive reasoning and problem-solving in mathematics

AE FINANCIAL LITERACY

AE1 Locate, evaluate, and apply personal financial information

AE2 Identify the components of a budget and how one is created

AE3 Set personal financial goals and develop a plan for achieving them

AE4 Use financial services effectively

AE5 Demonstrate ability to meet financial obligations

AF INTERNET USE AND SECURITY

AF1 Recognize the potential risks associated with Internet use

AF2 Identify and apply Internet security practices (e.g., password security, login, logout, log off, lock computer)

AF3 Practice safe, legal, and responsible use of technology in the workplace

AG INFORMATION TECHNOLOGY

AG1 Use technology appropriately to enhance professional presentations

AG2 Demonstrate effective and appropriate use of social media

AG3 Identify ways social media can be used as marketing, advertising, and data gathering tools

AH TELECOMMUNICATIONS

AH1 Select and use appropriate devices, services, and applications to complete workplace tasks

AH2 Demonstrate appropriate etiquette when using e-communications (e.g., cell phone, e-mail, personal digital assistants, online meetings, conference calls)

EMPLOYABILITY SKILLS

EA POSITIVE WORK ETHIC

EA1 Demonstrate enthusiasm and confidence about work and learning new tasks

EA2 Demonstrate consistent and punctual attendance

EA3 Demonstrate initiative in assuming tasks

EA4 Exhibit dependability in the workplace

EA5 Take and provide direction in the workplace

EA6 Accept responsibility for personal decisions and actions

EB INTEGRITY

EB1 Abide by workplace policies and procedures

EB2 Demonstrate honesty and reliability

EB3 Demonstrate ethical characteristics and behaviors

EB4 Maintain confidentiality and integrity of sensitive company information

EB5 Demonstrate loyalty to the company

EC SELF-REPRESENTATION

EC1 Demonstrate appropriate dress and hygiene in the workplace

EC2 Use language and manners suitable for the workplace

EC3 Demonstrate polite and respectful behavior toward others

EC4 Demonstrate personal accountability in the workplace

EC5 Demonstrate pride in work

ED TIME, TASK, AND RESOURCE MANAGEMENT

ED1 Plan and follow a work schedule

ED2 Work with minimal supervision

ED3 Work within budgetary constraints

ED4 Demonstrate ability to stay on task to produce high quality deliverables on time

EE DIVERSITY AWARENESS

EE1 Recognize diversity, discrimination, harassment, and equity

EE2 Work well with all customers and co-worker

EE3 Explain the benefits of diversity within the workplace

EE4 Explain the importance of respect for feelings, values, and beliefs of others

EE5 Identify strategies to bridge cultural/generational differences and use differing perspectives to increase overall quality of work

EE6 Illustrate techniques for eliminating gender bias and stereotyping in the workplace

EE7 Identify ways tasks can be structured to accommodate the diverse needs of workers

EE8 Recognize the challenges and advantages of a global workforce

EF TEAMWORK

EF1 Recognize the characteristics of a team environment and conventional workplace

EF2 Contribute to the success of the team

EF3 Demonstrate effective team skills and evaluate their importance in the workplace (e.g., setting goals, listening, following directions, questioning, dividing work)

EG CREATIVITY AND RESOURCEFULNESS

EG1 Contribute new ideas

EG2 Stimulate ideas by posing questions

EG3 Value varying ideas and opinions

EG4 Locate and verify information

EH CONFLICT RESOLUTION

EH1 Identify conflict resolution skills to enhance productivity and improve workplace relationships

EH2 Implement conflict resolution strategies and problem-solving skills

EH3 Explain the use of documentation and its role as a component of conflict resolution

EI CUSTOMER/CLIENT SERVICE

EI1 Recognize the importance of and demonstrate how to properly acknowledge customers/clients

EI2 Identify and address needs of customers/clients

EI3 Provide helpful, courteous, and knowledgeable service

EI4 Identify appropriate channels of communication with customers/clients (e.g., phone call, face-to-face, e-mail, website)

EI5 Identify techniques to seek and use customer/client feedback to improve company services

EI6 Recognize the relationship between customer/client satisfaction and company success

EJ ORGANIZATIONS, SYSTEMS, AND CLIMATES

EJ1 Define profit and evaluate the cost of conducting business

EJ2 Identify "big picture" issues in conducting business

EJ3 Identify role in fulfilling the mission of the workplace

EJ4 Identify the rights of workers (e.g., adult and child labor laws and other equal employment opportunity laws)

EJ5 Recognize the chain of command, organizational flow chart system, and hierarchy of management within an organization

EK JOB ACQUISITION AND ADVANCEMENT

EK1 Recognize the importance of maintaining a job and pursuing a career

EK2 Define jobs associated with a specific career path or profession

EK3 Identify and seek various job opportunities (e.g., volunteerism, internships, co-op, part-time/full-time employment)

EK4 Prepare a resume, letter of application, and job application

EK5 Prepare for a job interview (e.g., research company, highlight personal strengths, prepare questions, set-up a mock interview, dress appropriately)

EK6 Participate in a job interview

EK7 Explain the proper procedure for leaving a job

EL LIFELONG LEARNING

EL1 Acquire current and emerging industry-related information

EL2 Demonstrate commitment to learning as a life-long process and recognize learning opportunities

EL3 Seek and capitalize on self-improvement opportunities

EL4 Discuss the importance of flexible career planning and career self-management

EL5 Employ leadership skills to achieve workplace objectives (e.g., personal vision, adaptability, change, shared vision)

EL6 Recognize the importance of job performance evaluation and coaching as it relates to career advancement

EL7 Accept and provide constructive criticism

EL8 Describe the impact of the global economy on jobs and careers

EM JOB SPECIFIC TECHNOLOGIES

EM1 Identify the value of new technologies and their impact on driving continuous change and the need for life-long learning

EM2 Research and identify emerging technologies for specific careers

EM3 Select appropriate technological resources to accomplish work

EN HEALTH AND SAFETY

EN1 Assume responsibility for safety of self and others

EN2 Follow safety guidelines in the workplace

EN3 Manage personal health and wellness

OCCUPATIONAL SKILLS

OA APPLY PHYSICAL SCIENCE PRINCIPLES AND ENGINEERING APPLICATIONS TO SOLVE PROBLEMS AND IMPROVE PERFORMANCE IN AFNR POWER, STRUCTURAL, AND TECHNICAL SYSTEMS

OA1 Discuss types of renewable and non-renewable energy (e.g., solar, wind, hydro, fossil fuels)

OA2 Explain environmental impacts and sustainability of various energy sources (e.g., coal, hydro, wind, geothermal)

OA3 Compare the energy efficiency of various fuel sources (e.g., gas, diesel, natural gas, biofuels)

OA4 Differentiate between the operation of gasoline and diesel engines

OA5 Identify principles of hydraulic and pneumatic system operation

OA6 Apply the meaning of electrical measurements (e.g., amperage, voltage, wattage, resistance)

OA7 Differentiate between alternating and direct current

OA8 Calculate measurements of electricity (e.g., watts, amps, volts, Ohms Law)

OA9 Differentiate between the design and function of parallel and series electrical circuits

OB OPERATE AND MAINTAIN AFNR MECHANICAL EQUIPMENT AND TECHNICAL SYSTEMS

OB1 Discuss the importance and function of safety systems on tools and equipment

OB2 Demonstrate safe practices in the operation of power units and equipment

OB3 Demonstrate safe practices specific to agriculture power, structural, and technical systems (e.g., PPE, materials handling, shop/laboratory operation)

OB4 Outline power unit and equipment controls, startup and shut down procedures, and pre operation inspections using owners/service manuals

OB5 Identify components and systems of internal combustion engines

OB6 Select lubricants based on viscosity, source, and equipment compatibility

OB7 Discuss proper use and disposal of lubricants

OB8 Establish a preventative maintenance schedule for power units and equipment (e.g., lubricants, fluids, filters)

OC SERVICE AND REPAIR AFNR MECHANICAL EQUIPMENT AND POWER SYSTEMS

OC1 Use technical manuals and computer based diagnostics in engine systems analysis and repair

OC2 Outline the importance of safety procedures when working with heating and air conditioning systems

OC3 Interpret basic electrical components, symbols, and diagrams (e.g., wiring, switches, receptacles, duplexes)

OC4 Interpret basic hydraulic and pneumatic symbols and diagrams

OC5 Evaluate the importance of adjusting equipment including belts, drives, chains, and sprockets and maintenance of fluid conveyance components (e.g., hoses, lines, nozzles)

OC6 Identify hydraulic and pneumatic system fittings and ports

OC7 Test and service electrical systems and check multi-meter basics

OC8 Assess an internal combustion engines to determine service and repair of basic ignition, fuel, and compression

OC9 Assess malfunctioning electrical system components such as battery and lighting

OD PLAN, BUILD, AND MAINTAIN AFNR STRUCTURE

OD1 Demonstrate proper use of measurement and layout tools

OD2 Identify symbols and drawing techniques used to develop plans, sketches, and basic blueprints

OD3 Develop plans using scale and legends

OD4 Identify major parts and different views of a construction drawing

OD5 Create sketches and plans of agricultural structures

OD6 Develop criteria for selecting materials based on cost, quantities, and characteristics for a specific project plan

OD7 Prepare bills of materials to accompany plans and sketches

OD8 Apply basic principles of design, fabrication, and installation of agricultural structures

OD9 Select, maintain, and use hand/power tools in service, construction, and fabrication

OD10 Describe the steps in basic repair of a metal object (e.g., welding, brazing, riveting)

OD11 Identify kinds and characteristics of metal materials

OD12 Distinguish welding processes, positions, materials preparation, and equipment work piece setup (e.g., beveling/grinding)

OD13 Construct and/or repair metal structures and equipment using welding procedures, including those associated with SMAW, GMAW, GTAW, fuel-oxygen, and plasma arc torch methods

OD14 Discuss the steps in constructing a project out of wood (e.g., measuring, cutting, fastening, finishing)

OD15 Calculate areas and volumes for coatings (e.g., paints, stains, varnishes)

OD16 Determine proper paint/coating material and method for various tasks

OD17 Determine proper insulation material and use for a given task

OD18 Calculate materials for concrete, brick, stone, or masonry units in agricultural construction

OD19 Calculate fencing materials

OD20 Construct and/or repair fencing, including wood, static wire, electrical wire, and other fencing materials

OD21 Identify hazards and safety practices in planning, installing, and using components to complete and electrical circuit

OD22 Identify materials and tools used in electrical installation (e.g., wiring, fixtures, breakers, fuses, conduit)

OE USE CONTROL, MONITORING, GEOSPATIAL AND OTHER TECHNOLOGIES IN AFNR POWER, STRUCTURAL AND TECHNICAL SYSTEMS

OE1 Identify the importance and use of computer-based systems in agriculture, food, and natural resources (e.g., web/DVD based service information, software diagnostics)

OE2 Demonstrate electricity principles via the use of volt and amp meters and continuity testers

OE3 Evaluate concepts and principles of geospatial technologies

OE4 Describe equipment and processes used in geospatial technologies

OE5 Apply the principles of precision agriculture for map and sensor based systems

OE6 Apply the principles and use of sensors, controllers, and actuators