DOCUMENT RESUME

ED 363 696 CE 064 891

TITLE	PHOENIX. Higher Wage Careers.
INSTITUTION	Bismarck State Coll., ND.
SPONS AGENCY	North Dakota State Board for Vocational-Technical Education, Bismarck.
PUB DATE	Jun 93
NOTE	57p.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Biology; Career Exploration; Chemistry; Communication Skills; Interpersonal Relationship; *Job Skills; Mathematics Skills; Models; *Nontraditional Occupations; Physical Fitness; Postsecondary Education; Recruitment; Self Actualization; Technical Education; *Technical Occupations; Technology Education; *Vocational Education
IDENTIFIERS	Workplace Literacy

ABSTRACT

This document outlines the curriculum plan for the one-semester vocational-technical training component of PHOENIX: A Model Program for Higher-Wage Potential Careers offered by Bismarck State College (North Dakota) which prepares and/or retrains individuals for higher-wage technical careers. The comprehensive model for the program is organized around the three stages of recruitment, vocational technical training, and job success. The model is designed as an introduction to nontraditional/technical careers and courses and as a reinforcement of the student's personal development and confidence in basic workplace skills. The introductory section presents an overview of the program and comprehensive model, enrollment and orientation procedures, and the curriculum plan. The following topics are covered in the individual units of the vocational-technical training component: career counseling and assessment and career exploration; introduction to trade, industrial, and technical occupations; self-development; applied math concepts; workplace communications; applied issues (group communication skills, interpersonal relationships, and self-examination); physical fitness; applied biology/chemistry; and principles of technology. Each unit includes a course description, course focus statement, series of goals and objectives, list of materials referenced, and recommended course schedule. (MN)

PHOENIX

HIGHER WAGE CAREERS

Grant provided to

Bismarck State College
Vocational-Technical Education Division

with funding from

North Dakota State Board for Vocational-Technical Education

and

Job Training Partnership Act

JUNE 1993

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INTRODUCTION AND ACKNOWLEDGEMENTS

In step with the changing requirements of the workforce and addressing the need to integrate and retrain individuals seeking higher-wage technical careers, Bismarck State College, with funding from the North Dakota State Board for Vocational-Technical Education and the Job Training Partnership Act, offers **PHOENIX: A Model Program for Higher-Wage Potential Careers.**

The comprehensive model for this program is organized around the three stages of Recruitment, Vocational Technical Training, and Job Success. Recognizing that individuals seeking to enter a nontraditional field [and thus attain higher wage potential] often face the obstacles of sex bias and stereotyping, lack of academic preparation, harassment, lack of support by family, school personnel and peers, lack of guidance programs, lack of role models, and job placement, the model is designed as an introduction to nontraditional/technical careers and courses and as a reinforcement of the student's personal development and confidence in basic workplace skills.

The committee acknowledges the technical assistance and procedural information provided by Ron Mehrer, Director of Statewide Resources in Vocational Education and Kara Gruenberg, Learning Skills Center instructor at the North Dakota State College of Science.

CURRICULUM COMPONENTS COMMITTEE

A state-wide committee comprised of single parent/sex equity program coordinators and area vocational-technical staff was assigned the task of developing a comprehensive competency-based curriculum for the instructional stage of the model. This document is the result of the committee's work.

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Overview of Program

Although this document outlines the curriculum plan for the one semester vocational-technical training component of the program, the comprehensive model which follows includes all of the elements of the process. The components are organized around the three stages of recruiting, training, and placing individuals for technical or nontraditional jobs. Recruitment involves the activities relating to Outreach and Marketing; Vocational Technical Training includes Enrollment and Orientation activities as well as the actual Instructional process; Job Success addresses the Placement and Follow-up steps.

The framework for this model was developed by Jo Suchat Sanders in her 1981 publication **The Nuts and Bolts of NTO: How to Help Women Enter Nontraditional Occupations** (Scarecrow Press, Metuchen, NJ 1986). A comprehensive program builds on the recruitment activities by offering orientation and enrollment assistance including help with forms, procedures and financial aid; by providing career counseling, basic skill assessment, health and fitness assessment; and by developing an Individual Vocational Education Plan. The assessment process would determine the vocational educational plan to be developed and followed by the student. For example, a student interested in pursuing a health-related career might be directed to include the Applied Biology/Chemistry course in her/his plan; Principles of Technology might be part of the IVEP for a student seeking to be

an automotive technician. Retention of NTO students enrolled in the training program is identified as a goal; adaptations in the form of additional support services such as the Applied Issues course help to facilitate participation and to ensure this goal.

The third stage of the comprehensive model, Job Success, incorporates Placement Services and Follow-up. Placement services include continued support through groups and role models, instruction in job-seeking skills, networking, and contacts. To maximize job success and to provide consistent positive collaboration with local employers, the Follow-up stage includes ongoing contact with both the program completers and their employers.

PHOENIX

HIGHER-WAGE TECHNICAL CAREERS

MODEL PROGRAM COMPONENT FOR NONTRADITIONAL STUDENTS					
RECRUITMENT		VOCATIONAL TECHNICAL TRAINING		JOB SUCCESS	
Outreach	Marketing	Enrollment and Orientation	Instruction	Placement	Follow-up
AGENCY REFERRALS Job Service Social Services Voc. Rehab. Workers Comp. Community Advisory Comm.	Open House Workshops Presentations Audiovisuals Brochures Posters Newsletters Newspapers Radio and TV Mailings Press Releases	Interview Application Eligibility IVEP Basic Skills Test Health Assessment Career Counseling and Assessment Program Orientation	**REQUIRED** Self-Development App. Math Concepts. Applied Issues Intro to T & I, T & H Work Place Communications Career Exploration Physical Fitness **ELECTIVE** Applied Biochemistry Principles of Technology	**CONTACTS** Advisory Comm. Employers EEO Staff* BAT Office* Dot Office Employees* **SUCCESSFUL COMPLETERS** OJT Work Exp. Apprenticeship Armed Forces Job Corp A Job Technical Training Continued Education	**STUDENT** Longevity Seasonal/Full-Time Salary Range Upward Mobility Job Satisfaction Barriers Employers Support **EMPLOYER** Work Ethics Adequate Training Satisfactory Performance Continued Employment Advanced Training Opportunities

*EEO - Equal Employment Opportunity
*BAT - Bureau of Apprenticeship Training
*DOT - Department of Transportation

Enrollment and Orientation

Student enrollment and orientation to the program will be accomplished on an individual basis by the program coordinator. In the month preceding instruction, the coordinator will conduct an interview and assessment with each candidate. In addition to assistance with the application process, assessment of the student's basic skills, assessment of her/his health and fitness, and career counseling will be provided. An Individual Vocational Education Plan will be written at this time. The plan may involve utilizing training/educational resources available within the community as well as those provided by the model program.

Suggested assessment instruments include:

Ability or Aptitude Tests
- General Aptitude Test Battery (GATB)
- Career Ability Placement Survey (CAPS)
- Learning Styles Inventory

Career Interest Inventories
- COPSystem Interests Inventory (COPS)
- Career Assessment Inventory (CAI)

Personality Assessments
- Personal Profile
- Myers-Briggs Type Indicator (MBTI)

Basic Skills Assessment
- TABES

CURRICULUM PLAN

The instructional plan for this program is designed to furnish relevant training and vocational education activities to the target population of single parents, displaced homemakers, and single pregnant women who desire the technical skills needed to enter higher-wage potential occupations. These occupations are often those not traditionally associated with their sex. Recognizing the obstacles encountered by individuals in nontraditional careers, this instructional strategy integrates supportive services and training in survival skills along with technical skills education.

The curriculum plan calls for concurrent enrollment in the following required courses: Career Exploration, Introduction to Trade, Industry and Technical Occupations, Self-Development, Workplace Communications, Applied Issues, Applied Math Concepts, and Physical Fitness. Elective courses include Applied Biology/Chemistry and Principles of Technology. The description, focus, goals and objectives, material referenced, and recommended length of instructional time for each course are provided on the following pages of this curriculum guide.

CAREER COUNSELING AND ASSESSMENT

CAREER EXPLORATION

CAREER COUNSELING AND ASSESSMENT

COURSE DESCRIPTION

This course is designed to assess the participant's abilities and interests in order to develop a composite picture of the individual's personal strengths and limitations. Assessment instruments will include: test of basic skills, ability and aptitude tests, career interest inventories, learning styles inventories, and personality assessments. (Testing administered prior to enrollment in this class must have been within the previous 12 months.)

COURSE FOCUS

This course focuses on identifying personal interests, abilities, and skills. The participant will gain an understanding of her/his individual characteristics and how these relate to achievement of educational and career goals.

GOALS AND OBJECTIVES

Goal: The student will gain insight into her/his interests, abilities, and skills; and how these relate to individual educational and career goals.

Objectives:

A. Upon completion of an interest inventory (i.e. COPS. CAI), the student will identify three areas of interest.

B. Upon completion of a basic skills test (i.e. TABES), the student will be able to identify levels of ability in each of the academic areas tested.

C. Upon completion of an achievement/aptitude test (i.e. ASVAB, CAPS, ACT), the student will be able to describe how her/his scores in at least three different aptitude areas relate to specific occupational goals.

D. Upon completion of a personality inventory (i.e. Myers-Briggs Type Indicator, 16-PF, Holland Codes), the student will be able to identify her/his dominant personality type.

CAREER EXPLORATION

COURSE DESCRIPTION

This course provides an opportunity for in-depth research of the student's higher-wage-potential career interests. Activities include industry visits, informational interviews, and shadowing of students and workers in high-wage career fields.

COURSE FOCUS

This course addresses the unique career exploration concerns of students as they pursue higher-wage-potential careers.

GOALS AND OBJECTIVES

Goal: The student will participate in opportunities to locate, evaluate, and interpret career information.

Objectives:

In the process of this course, the student will:

A. Locate and orally report information relative to three high-wage careers.

B. Describe the educational requirements of three occupations he/she will choose to explore.

C. Participate in at least one job shadowing experience.

D. Conduct two informational interviews with students in programs leading to high-wage occupations. (This is to be measured through an oral report to class.)

E. Conduct two informational interviews with workers in high-wage careers. (This is to be measured through an oral report to class.)

F. Attend one meeting/discussion with panel of students in a higher-wage-potential occupational training program.

G. Attend one meeting/discussion with panel of workers employed in high-wage occupations.

H. Locate two resources for finding employment for a specific job title.

I. Identify two supply and demand trends for a specific job title.

J. Conduct a mock interview with a prospective employer concerning a specific job title.

K. Match interests to a specific career goal.

L. Match aptitudes to a specific career goal.

M. Match basic skills to a specific career goal.

N. Match learning style(s) to a specific career goal.

O. Attend one industry tour of high-wage occupations.

P. Compute training program expenses.

Q. Identify three personal job-related strengths.

R. Identify three high-wage career benefits.

Recommended Course Length

One hour per day, five days per week, for twelve weeks

INTRODUCTION TO

TRADE, INDUSTRIAL, TECHNICAL OCCUPATIONS

Safety Procedures

Appropriate Clothing

Industrial/Technical Documentation

Industrial Terminology

Interpersonal Skills

Unique Machines and Processes

Physical Limitations and Requirements

Working Environment Conditions

Measurement Techniques

Fastening Methods

Hand Tools

Power Tools

INTRODUCTION TO TRADE, INDUSTRIAL, TECHNICAL OCCUPATIONS

COURSE DESCRIPTION

Information gained in this course will help the student feel more comfortable in operating some of the basic machines found in specific fields of work. Hands-on work in specific program areas will teach students to safely work with common hand tools and to operate machines commonly found on the job. This course explores barriers experienced by single parents, homemakers, and students enrolled in technical career majors.

COURSE FOCUS

This course addresses the technical skill needs of students as they pursue higher-wage-potential careers.

GOALS AND OBJECTIVES

Goal 1: The student will learn safety procedures for operating common hand tools and machines specific to fields of work. These safety procedures will be demonstrated by the student throughout the course.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify safety procedures specific to her/his occupation.

B. Demonstrate safe operation of hand tools, power tools, and machines provided for in-class practice.

C. Identify OSHA regulations for working environments.

Goal 2: The student will demonstrate ability to operate hand and power tools, machines and computer processes by following the specific instructional guidelines for operation and safety.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify the machines and operating processes specific to her/his occupational choice.

B. Operate the hand tools, power tools, and machines provided for in-class practice.

C. Identify and use computer processes specific to her/his occupation.

Goal 3: The student will gain knowledge of specific work-appropriate clothing and wear clothing acceptable to the specific industry standards.

Objective:

Upon completion of this course, the student will be able to:

A. Describe the clothing appropriate for specific job application and acceptable to specific industry standards.

Goal 4: The student will learn to use industrial/technical terminology on industry-specific forms.

Objectives:

Upon completion of this course, the student will be able to:

A. Define orally and in writing specific industrial terminology.

B. Document industrial/technical information on forms specific to their occupation.

Goal 5: The student will demonstrate knowledge of sexual harassment policies and OSHA regulations.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify sexual harassment practices and policies.

B. Identify OSHA requirements for working environments.

Goal 6: The student will gain knowledge of the physical limitations and requirements for working in the various trade, industrial and technical occupations.

Objectives:

Upon completion of this course, the student will be able to:

A. List physical limitations and requirements specific to her/his occupation.

B. List adaptations for mental and physical limitations that can be made within the specific occupation.

Goal 7: The student will apply measurement techniques.

Objective:

Upon completion of this course, the student will be able to:

A. Use the measurement instruments and techniques specific to her/his chosen occupation.

Goal 8: The student will identify fastening methods.

Objective:

Upon completion of this course, the student will be able to:

A. Identify fastening methods according to industry standards for specific occupations.

MATERIAL REFERENCED:

DISCOVER, Minnesota Technical College System

RECOMMENDED COURSE SCHEDULE:

Two-hour lab that meets two times a week

SELF-DEVELOPMENT

Self-Esteem Strategies

Affirmations Build Confidence

The Power of Goal-Setting

Women's Current Economic Status

Female/Male Stereotypes

Nontraditional Worker Myths

Internal and External Career Barriers

Problem-Solving Strategies

Personal Values and Needs

Personality Types

Power and Control Issues

Family Influence

Recognizing Feelings

Effective Listening and Communication

Conflict Resolution

Women's Contributions

Assertive Practices

Legal Rights

Decision-Making Techniques

Time Management Strategies

Family and School Roles

Stress

Resource Management

Healthy Habits

Reducing Barriers

Raising Happy, Healthy Children

SELF-DEVELOPMENT

COURSE DESCRIPTION

This course prepares students for higher-wage-potential careers by increasing student self-understanding, confidence, and self-esteem. The final unit of the course focuses on parenting issues.

COURSE FOCUS

This course addresses the unique personal development concerns of individuals pursuing technical training programs.

GOALS AND OBJECTIVES

Goal 1: The student will learn positive self-esteem strategies and practice affirmations.

Objectives:

Upon completion of this course, the student will be able to:

A. Write self-esteem goals listing the action she/he will take to accomplish the goals.

B. Use personal affirmation statements.

Goal 2: The student will demonstrate goal-setting skills.

Objectives:

Upon completion of this course, the student will be able to:

A. List five guidelines to successful goal setting.

B. Complete a weekly Personal Growth Goal Setting Diary.

Goal 3: The student will evaluate gender stereotypes, roles and nontraditional worker myths.

Objectives:

Upon completion of this course, the student will be able to:

A. State examples of gender inclusive language.

B. Analyze television programs for gender stereotypes.

C. Give three myths regarding women in nontraditional careers, describing personal feelings about women in technical careers.

D. Describe women's current economic status.

Goal 4: The student will examine internal/external career barriers.

Objectives:

Upon completion of this course, the student will be able to:

A. List three internal barriers and three external barriers to personal success in technical careers.

B. Identify personal strategies for overcoming these barriers.

Goal 5: The student will identify problem-solving strategies.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify three problem-solving strategies.

B. Explain the application of these strategies to selected personal life situations.

Goal 6: The student will analyze individual differences.

Objectives:

Upon completion of this course, the student will be able to:

A. Complete three personal attribute inventories and summarize the results.

B. Write five personal growth objectives regarding power and control in interpersonal relationships.

Goal 7: The student will analyze family influence.

Objectives:

Upon completion of this course, the student will be able to:

A. List three influences or childhood messages that continue to have impact.

B. Write a plan for healthy expression of one emotion that is difficult to express.

Goal 8: The student will differentiate assertive/passive/ aggressive behavior and practice assertive skills.

Objectives:

Upon completion of this course, the student will be able to:

A. Demonstrate listening skills by allowing individuals to speak without interruption 80% of the time and by reflecting the speaker's message accurately 80% of the time.

B. Identify personal modes of conflict behavior and five strategies to accomplish conflict resolution.

C. Identify ten life contributions that were made by women whose assertiveness helped them accomplish their goals.

D. Document situations of assertive behaviors, passive behaviors or aggressive behaviors by maintaining a log for a period of two weeks.

Goal 9: The student will examine sexual harassment, discrimination and women's legal rights.

Objectives:

Upon completion of this course, the student will be able to:

A. Define sexual harassment and list five steps that may be taken by the victim if harassment occurs.

B. List ten rights women have under the law.

Goal 10: The student will learn and exhibit effective decision making techniques.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify personal decision-making styles by completing the student activity, "Short Test for Decision-Makers."

Goal 11: The student will learn time management and stress management skills.

Objectives:

Upon completion of this course, the student will be able to:

A. Describe five individual strategies to prioritize and allocate time for school and employment use.

B. List signals of stress in her/his life and five stress management skills that can be utilized.

C. Assess personal health habits and write a plan for a healthier, lower-stress lifestyle.

D. Draw a networking map of her/his personal support system.

Goal 12: The student will examine resource management strategies.

Objectives:

Upon completion of this course, the student will be able to:

A. Develop a personal monthly budget following the steps of resource management outlined in the unit.

B. Outline a plan for managing her/his personal resources of money, time, energy, skills, interests, and attitudes.

Goal 13: The student will balance work and family roles.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify multiple roles of parenting, school and/or work.

B. Develop a cooperation plan for family members.

MATERIAL REFERENCED:

"Personal Development": DISCOVER, Minnesota Technical School System

Parenting Unit of SELF-DEVELOPMENT COURSE

The purpose of this unit is to teach parents skills that will help them be effective in the job of parenting. The unit focus includes the following topic areas which will promote positive parenting practices and problem-solving strategies:

Helping my children to feel good about themselves
The basics of discipline
Building good relationships with my children
Helping children cope with divorce
Parenting children of different ages
Choosing daycare for my children
Latchkey Children: Should my child stay home alone?
Keeping my children safe

GOALS AND OBJECTIVES

Goal: Students will learn how to raise healthy, happy children who will grow into responsible, contributing adults.

Objectives:

After completing this unit, the student will be able to:

A. List three reasons why it is important to build self-esteem in children.

B. Describe five discipline techniques or strategies to use with children.

C. Identify five myths and facts about spanking and hitting children.

D. List five reasons why children misbehave.

E. Name the four goals of misbehavior.

F. Describe five ways to gain children's cooperation.

G. Describe five fun activities to do with children of different ages.

H. List three positive effects and three negative effects that television and video viewing has on children.

I. Identify five ways that divorce affects children.

J. Identify five ways that parents can help children adjust to divorce.

K. Identify five ways that parents can accomplish more effective parenting after divorce.

L. Name two characteristics of children for each stage of development.

M. List five characteristics of a quality daycare.

N. Describe orally or in writing the hazards of latchkey arrangements.

O. List ten ways to prepare a child for latchkey.

P. Name five of the most common childhood accidents and ways to prevent them.

Q. Explain five ways to help children develop good eating habits.

MATERIAL REFERENCED:

"Raising Happy Healthy Children," Unit 3, LIFE SKILLS FOR SINGLE PARENTS: A CURRICULUM GUIDE

RECOMMENDED SCHEDULE FOR COMPLETE SELF-DEVELOPMENT COURSE

One-hour class per day, five days per week, for one semester

APPLIED MATH CONCEPTS

APPLIED MATH CONCEPTS

COURSE DESCRIPTION

This course provides an overview of basic math skills and an introduction to algebra. The course is designed to strengthen problem solving and to reduce math anxiety through mathematics application in occupational-related activities.

COURSE FOCUS

This course focuses on basic math/algebra skills and practical applications using calculators as a learning tool. Goals 1-6 will prepare students for a consumer math or beginning algebra course. Goals 7-11 will prepare students for intermediate algebra or for a technical mathematics course.

GOALS AND OBJECTIVES

Student placement will be made by using a math assessment instrument to establish the appropriate goals and objectives.

A pretest, comparable to the required posttest, may be used to determine student mastery of each objective. Following completion of assignments from each unit, the student will demonstrate mastery by achieving at least 70% proficiency on a 20-point assessment that includes application problems.

Applications in applied mathematics as related to the occupational setting will include the use of manipulatives, hands-on lab activities, and problem solving exercises. These educational experiences will be integrated throughout instruction. Cooperative learning is encouraged.

Goal 1: The student will master operations with whole numbers and be able to obtain the GCG and the LCM.

Objectives:

Upon completion of this course, the student will be able to:

A. Read and write whole numbers.
B. Round off and estimate whole numbers.
C. Add whole numbers.
D. Subtract whole numbers.
E. Multiply whole numbers.
F. Divide whole numbers.
G. Illustrate exponential notation and order of operations.
H. Identify prime and composite numbers.
I. Apply divisibility tests.
J. Find the Greatest Common Factor (GCF).
K. Find the Least Common Multiple (LCM).

Goal 2: The student will master operations with fractions.

Objectives:

Upon completion of this course, the student will be able to:

A. Use the language of fractions.
B. Identify proper fractions, improper fractions, and mixed numbers.
C. Convert improper fractions and mixed numbers.
D. Write equivalent fractions.
E. Add fractions.
F. Subtract fractions.
G. Multiply fractions.
H. Divide fractions.

Goal 3: The student will master operations with decimals.

Objectives:

Upon completion of this course, the student will be able to:

A. Read and write decimal numbers.
B. Round a decimal to a given place value.
C. Add decimals.
D. Subtract decimals.
E. Multiply decimals.
F. Divide decimals.
G. Estimate decimals.
H. Compare and convert fractions and decimals.

Goal 4: The student will master ratios, proportions and percents and be able to convert between percents, decimals and fractions.

Objectives:

Upon completion of this course, the student will be able to:

A. Calculate ratio and price per unit.
B. Solve proportions.
C. Calculate application problems using proportions.
D. Change a percent to a fraction or a decimal.
E. Change a decimal or a fraction to a percent.
F. Identify the part, base and rate.
G. Use percent to calculate discount, commission, sales tax, increase or decrease, simple and compound interest.

Goal 5: The student will master measurement in both the U.S. Customary System and the Metric System and be able to convert between the two.

Objectives:

Upon completion of this course, the student will be able to:

A. Define the units of the U.S. Customary System.
B. Denominate numbers.
C. Define the units of the Metric System.
D. Convert between the U.S. Customary and the Metric System of Measurement.

Goal 6: The student will master the basics of geometry.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify angles, lines and geometric figures.
B. Calculate perimeter.
C. Calculate area.
D. Calculate volume.
E. Use the Pythagorean Theorem.
F. Calculate square roots.

Goal 7: The student will master the operations of signed numbers.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify signed numbers, opposites, and absolute value.
B. Add signed numbers.
C. Subtract signed numbers.
D. Multiply signed numbers.
E. Divide signed numbers.
F. Identify distributive laws.
G. Illustrate the order of operations in exercises involving the use of exponents.

Goal 8: The student will master the simplifying of algebraic expressions and the solving of algebraic equations.

Objectives:

Upon completion of this course, the student will be able to:

A. Simplify an algebraic expression.
B. Determine if a given value is a solution of an equation.
C. Solve an equation of the form $x + a = b$.
D. Solve an equation of the form $ax = b$.
E. Solve an equation of the form $ax + b = c$.
F. Solve an equation of the form $ax + b + cx + d$.
G. Solve an equation containing parentheses.
H. Translate verbal expressions into mathematical expressions.
I. Translate a sentence into an equation and solve the equation.

Goal 9: The student will master the transposing of formulas and the solving of various applications in algebra.

Objectives:

Upon completion of this course, the student will be able to:

A. Solve terms within a formula.
B. Transpose percent equations.
C. Calculate markup and discount.
D. Solve investment problems.
E. Calculate mixture problems.
F. Calculate uniform motion problems.
G. Solve geometry problems.
H. Solve puzzle problems.

Goal 10: The student will master the concepts of exponents, scientific notation and the operations of polynomials.

Objectives:

Upon completion of this course, the student will be able to:

A. Define exponents, scientific notation, and polynomials.
B. Add polynomials.
C. Subtract polynomials.
D. Multiply polynomials.
E. Divide polynomials.

Goal 11: The student will master the concept of factoring and be able to solve equations by factoring.

Objectives:

Upon completion of this course, the student will be able to:

A. Identify common factors.
B. Factor special products.
C. Factor polynomials.
D. Solve equations by factoring.

MATERIAL REFERENCED

Angle, Allen R. Elementary Algebra for College Students, third edition.
Applied Mathematics, The Center for Occupational Research and Development (CORD).
Aufman and Barker, Basic College Mathematics:An Applied Approach, fourth edition.
Aufman, Barker, and Lockwood, Beginning Algebra with Applications, third edition.
Barker, Rogers, and Van Dyke, Fundamentals of Mathematics, fifth edition.
Barker, Rogers, and Van Dyke, Basic Algebra, third edition.
DISCOVER: Applied Issues, Minnesota Technical College System.
Keedy and Bittinger, Basic Mathematics, fifth edition.
Streeter, Hutchinson, and Hoelzle, Basic Mathematical Skills with Geometry, third edition.
Wright, D. Franklin, Arithmetic for College Students, sixth edition.
Wright and New, Introductory Algebra, second edition.

RECOMMENDED COURSE SCHEDULE

One hour class per day, five days per week, for one semester

WORKPLACE COMMUNICATIONS

Innovation and Problem-Solving

Teamwork

Self-Management

Presentation Skills

Goal Setting and Time Management

Reading for Information

Locating and Using Information

Communicating on the Job

WORKPLACE COMMUNICATIONS

DESCRIPTION

This course is designed to raise participants' awareness of the role of communications in the workplace. Communication skills in the workplace are interrelated and include a combination of oral, written, visual, and nonverbal components. Employees who communicate effectively are more likely to achieve success in their occupation.

COURSE FOCUS

This course focuses on those communication components which are not specifically emphasized in the traditional English class. It addresses communication competencies, skills, and personal qualities essential for both students going directly to work and for those planning for further education.

GOALS AND OBJECTIVES

The student who successfully completes this course will be able to meet the following course goals and objectives:

Goal 1: The student will demonstrate creative thinking and problem-solving skills.

Objectives:

A. Working in a group setting with a given problem, the student will brainstorm solutions according to the rules for effective brainstorming.

B. Given a case study, the student will write an analysis of a problem following the five steps in problem solving.

C. Given a sample problem, the student will list five resources which could be used in problem solution.

D. Given a workplace situation, the student will describe how problem-solving techniques can be applied to it.

E. Given a solution, the student will write a plan for implementation, including time lines, staff impact, cost, building utilization, and other relevant, necessary aspects.

Goal 2: The student will develop the knowledge, skills, and attitudes essential for effective teamwork in the workplace.

Objectives:

A. After studying teamwork practices in class, the student will match group behaviors with definitions of shared leadership with at least 85 percent accuracy.

B. While observing a group activity, the student will complete an observation analysis.

C. After observing a group activity, the student will summarize information about shared leadership in group activities.

D. Given a group activity, the student will demonstrate effective group participation skills.

E. Given a case study, the student will explain how teamwork will apply in a work group in their intended occupational area.

Goal 3: The student will acquire the knowledge, skills, and attitudes that contribute to effective self-management in the workplace.

Objectives:

A. Using labor department publications, the student will identify five changes occurring in her/his specific occupational area because of competition, technology, the global economy, and/or demographics.

B. After viewing a video on the workplace of the future, the student will explain at least two examples of workplace communications.

C. Given a list of terms related to communication skills, the student will correctly match them to their definitions with at least 85 percent accuracy.

D. After viewing a video featuring a workplace scenario, the student will apply a problem-solving process and recommend solutions to at least two problems in workplace communications.

E. After completion of the unit study, the student will explain in writing the roles of competition and cooperation in the high-performance workplace.

Goal 4: The student will develop oral and written presentation skills.

Objectives:

A. Following a problem-solving activity, the student will present a solution, orally responding to questions from the audience.

B. Following a problem-solving activity, the student will present a written explanation of the process followed and a solution.

C. Given a choice of workplace issues, the student will present a persuasive presentation on that issue.

Goal 5: The student will develop goal setting and time management skills.

Objectives:

A. Using a group brainstorming process, the student will contribute at least three work-related goals.

B. Using the list of work-related goals developed by the group, the student will prioritize a personal list of five goals.

C. From the first day of class, the student will maintain a to-do list, checking it daily at the beginning of each class period.

D. Given a long-range project, the student will demonstrate principles of good time management in developing and following a time line for project completion.

Goal 6: The student will develop skills in reading for information.

Objectives:

A. Given a series of ten articles, the student will identify the appropriate reading strategy (skimming, scanning, etc.) depending on purpose for reading and materials being read with at least 85 percent accuracy.

B. Given a work-related text, the student will show information-gathering understanding by using printed aids such as chapter summaries, end-of-chapter

questions, beginning-of-chapter objectives/overviews, tables of contents, indexes, and appendices.

Goal 7: The student will learn to locate and use information in the workplace.

Objectives:

A. Given a list of information sources, the student will rate them as to accessibility.

B. Without aid of references, the student will orally or in writing describe strategies for gathering information from oral, written, and electronic sources.

C. From a list provided, the student will match the information needed with the source for that information with at least 85% accuracy.

D. Given a request for specific information, the student will use a workplace database to access the information.

E. Given a workplace situation, the student will produce a written request for information.

F. Given a workplace scenario, the student will use questioning and note taking skills required to complete a work procedure.

G. From charts, graphs, and tables supplied, the student will locate and summarize specified information with at least 85 percent accuracy.

Goal 8: The student will develop skill in communicating with both customers and co-workers.

Objectives:

A. Given a blank form, the student will orally or in writing explain how to complete it.

B. Given a role play situation, the student will demonstrate active listening skills in dealing with a co-worker's complaint.

C. Given a role play situation, the student will identify nonverbal communications and explain how it affected the communication process.

D. Using a manufacturer's guide and a simulated equipment problem, the student will role play troubleshooting over the telephone by asking probing questions, using the guide, giving clear explanations, and offering options.

E. The student will list five sources for information about products, services, or consumer relating to their occupational area.

F. In a group setting, the student will critique various forms of written communication regarding the workplace.

G. Following class discussion, the student will identify three personal communication strengths and three personal communication goals.

H. Given a multiple choice survey, the student will identify the appropriate direction of communication--superior, subordinate, or peer--with at least 85 percent accuracy.

MATERIALS REFERENCED (See chart that follows)

APPLIED COMMUNICATIONS: Agency for Instructional Technology
WORKPLACE READINESS: Agency for Instructional Technology

RECOMMENDED COURSE SCHEDULE:

One-hour class per day, five days per week, for one semester

COMPETENCY	APPLIED COMMUNICATION	WORKPLACE READINESS
Innovation and problem-solving	M15, L3 M3	Y
Teamwork	M6	Y
Self-management (competition/transition skills)	M15, L1	Y
Presentation skills	M15, L10 M9	
Goal setting and time management	M15, L2	
Reading for information	M15, L4 M15, L7 M2	
Locating and using information	M2	
Communicating on the job with customers and co-workers	M11, L4 and 5 M5 M10, L3 and 4 M1 M7	

APPLIED ISSUES

Group Communication Skills

Interprersonal Relationships

Self-Examination

APPLIED ISSUES

COURSE DESCRIPTION

This course prepares students for higher-wage-potential career majors by providing support and practice using interpersonal communications and small group process skills. While this course explores barriers encountered in some technical careers, the emphasis is on the student's success and personally-defined progress.

COURSE FOCUS:

The focus of this course is to address the unique support needs of students as they pursue higher-wage-potential technical careers.

GOALS AND OBJECTIVES:

Goal 1: The student will use support group ground rules, display respect, demonstrate group process skills, and support group members' endeavors.

Objectives:

In the process of the course, the student will:

A. Write support group ground rules in cooperation with other group members.

B. Utilize support group ground rules that would display respect, demonstrate group process skills and support group members' endeavors.

Goal 2: The student will exhibit interpersonal communication skills, exhibit oral communication skills, exhibit listening skills, accept constructive feedback, provide constructive feedback, and show empathy.

Objectives:

In the process of the course, the student will:

A. Use interpersonal skills and communication skills in a support group setting.

B. Provide constructive feedback within the specific guidelines of the group.

Goal 3: The student will identify personal fears, express personal opinion and identify crisis alternatives.

Objectives:

In the process of the course, the student will:

A. Use the Jo-Hari Window model or other activities and specific guidelines of the group to self disclose.

B. Record her/his responses to life/education issues in a personal journal or on tape for a minimum of four times a week.

Material referenced:

DISCOVER: Applied Issues, Minnesota Technical College System

Recommended Course Schedule:

One-hour class, one time per week, for one semester

PHYSICAL FITNESS

Prefitness and Postfitness Assessments

Weight Training

Aerobic and Flexibility Conditioning

Proper Lifting Procedures

PHYSICAL FITNESS

COURSE DESCRIPTION

This course is designed to help students gain strength, endurance, and flexibility so they are more physically able to perform tasks required for higher wage potential technical occupations. Although weight loss may result from this program, that is not the goal.

COURSE FOCUS

This course focuses on assessing the student's physical ability upon entrance to the program, preparing the student to enter a physically challenging career and observing the student's behaviors in a different setting.

GOALS AND OBJECTIVES

Goal 1: To gain a better understanding of the student's physical abilities as they pertain to higher wage potential occupations by assessing physical abilities at the beginning of the physical fitness component and again at the end.

* The student will be assessed in the following areas:

1. muscle strength
2. cardiovascular stamina
3. body fat
4. flexibility
5. agility
6. blood sugar (if the test is available)
7. blood pressure
8. dynamic strength
9. overall conditioning

Objectives:

Upon completion of the course, the student will be able to:

A. Discuss her/his initial abilities and individual progress made during the program.

B. Increase upper and lower body muscle strength using weight training equipment.

C. Increase cardiovascular stamina through a 12-minute aerobics (walk and jog) test.

D. Assess blood pressure and increase cardiovascular fitness through the step test.

E. Assess body fat through weight, body measurements, and skin caliper testing.

F. Increase dynamic strength through one-minute-bent-leg sit-ups, and push-ups with no time limit.

G. Increase hip and hamstring flexibility (sit-and-reach exercise), shoulder flexibility (horizontal and vertical exercise), and forward trunk flexibility.

H. Complete the physical agility test.

I. Assess blood sugar levels (if the test is available).

Goal 2: To use the weight-training equipment to develop and increase muscle tone and strength, particularly upper body and lower body strength to perform the tasks required in nontraditional jobs.

Objectives:

Upon completion of the course, the student will be able to:

A. Increase upper-body strength by at least 25 percent.

B. Increase lower-body strength by at least 25 percent.

C. List the names and functions of all equipment used.

D. Perform all weight training according to specific safety and procedural guidelines.

Goal 3: To develop and increase cardiovascular stamina, dynamic strength, flexibility, and agility by participating in aerobic and flexibility conditioning. The student will also decrease body fat and lower resting heart rate.

Objectives:

Upon completion of the course, the student will be able to:

A. Increase cardiovascular stamina by at least 25 percent.

B. Increase dynamic strength by at least 25 percent.

C. Increase flexibility and agility by at least 25 percent.

D. Decrease body fat by at least 10 percent.

E. Decrease resting heart rate by at least 10 percent.

MATERIALS REFERENCED

Section 3, ONCW Curriculum, Ohio

RECOMMENDED COURSE LENGTH

One hour per day, three days per week, for one semester

APPLIED BIOLOGY/CHEMISTRY

Natural Resources

Water

Plant Growth and Reproduction

Nutrition

Continuity of Life

Air and Other Gases

Disease and Wellness

Life Processes

Waste and Waste Management

Synthetic Materials

Community of Life

Microorganisms

APPLIED BIOLOGY/CHEMISTRY

COURSE DESCRIPTION

This course is a set of occupationally-related instructional units that integrate biology and chemistry as a unified domain for study, presents science in the context of major life issues, involves students in hands-on learning, and provides access to basic science principles.

COURSE FOCUS

Applied Biology/Chemistry is not intended to replace traditional biology or chemistry courses. For students who wish to enter fields such as health or biotechnology, it can serve as a preparatory course for the move to traditional courses.

GOALS AND OBJECTIVES

Goals:

1. The student will experience success in a science course.
2. The student will gain a foundation of basic principles in biology and chemistry.
3. The student will have increased career opportunities because of this learning experience.
4. The student will have enhanced work force capability as a result of this course.
5. The student will be prepared to make intelligent daily decisions relative to living in a technical society.
6. The student will be empowered to be successful in technical training and/or progress to more advanced theory-oriented science courses.

Objectives:

Unit 1: "Natural Resources"

Upon completion of this unit, the student will be able to:

A. Describe whether or not specific natural resources will be available in the future.

B. Give examples in writing of how natural resources are used to produce energy, made products, provide food and shelter, and improve the quality of life.

C. Analyze problems that result from obtaining and using natural resources.

D. Propose solutions to problems resulting from obtaining and using natural resources.

E. Relate jobs to natural resources.

Unit 2: "Air and Other Gases"

Upon completion of this unit, the student will be able to:

A. Analyze the pressure, volume and temperature relationships of gases in biological and chemical systems.

B. Analyze the importance of each component of the atmosphere to plant and animal life.

C. Evaluate the economic, environmental, and personal impact of commercial uses of gases.

D. Predict the effects on animal and plant life of industrial and agricultural activities that produce different types of atmospheric pollutants.

Unit 3: "Water"

Upon completion of this unit, the student will be able to:

A. Evaluate the effect of different water uses on water quality and water quantity.

B. Analyze the role of water in maintaining life: as a transporter of nutrients, in biochemical reactions, in maintaining water balance and in regulating temperature.

C. Express the concentration of solutes in a solvent appropriately according to the occupational context.

D. Carry out titration procedures that might be used in an occupational setting.

E. Analyze neutralization reactions and reactions involving buffer solutions such as those that might be carried out in an industrial setting.

F. Interpret pH readings and the use of the pH scale as an indicator of waters acidity or alkalinity.

G. Explain tests to determine water quality, including pH, biochemical oxygen demand, total solids, and concentrations of various solutes in water.

H. Link water-treatment methods to different types of wastewater contamination that treatment is intended to address.

I. Describe several different methods to prevent water pollution during personal or domestic use of water and handling of wastes.

Unit 5: "Continuity of Life"

Upon completion of this unit, the student will be able to:

A. Relate the continuation of life to the cell's chemical code: DNA.

B. Relate the male and female reproductive systems to their reproductive functions.

C. Compare how different methods of birth control prevent pregnancy.

D. Predict the special needs of the expectant mother and the developing fetus during different stages of pregnancy and birth.

E. Explain what animal breeders need to know about genetic inheritance in animals to produce more economically valuable breeds.

F. Compare the results of natural selection in wild populations to the results of artificial selection in similar domesticated species.

G. Outline methods for altering the genetic makeup of an organism.

H. Predict how genetic engineering might affect society during her/his lifetime.

Unit 6: "Nutrition"

Upon completion of this unit, the student will be able to:

A. Determine the presence of key nutrients in foods by conducting laboratory tests.

B. Analyze the components and functions of nutrients in an optimal diet and an optimal feed ration.

C. Evaluate the nutritional value of popular foods, advertised diet plans, and her/his own dietary intake.

D. Relate symptoms of unbalanced diets/rations to the function of nutrients in humans and animals.

E. Appraise the advantage and disadvantages of differentmethods of food processing and feed milling.

F. Evaluate the benefits and problems associated with different types of food/ration additives and supplements.

G. Describe food storage, handling and preparation methods to ensure food quality and health in food-handling operations, both commercial and domestic.

H. Link digestive-system anatomy and physiology in humans and other animals to their food or feed requirements.

I. Formulate and evaluate solutions to given nutritional problems.

Unit 7: "Disease and Wellness"

Upon completion of this unit, the student will be able to:

A. Describe some major health threats and leading causes of disease in the United States.

B. Outline methods of disease prevention and control according to what is known about how diseases originate.

C. Analyze how the body defends itself against disease.

D. Compare and contrast bacterial and viral infections, their treatment, and prevention.

E. Evaluate facts and beliefs about different types of abused chemicals and their effects on the body.

F. Write a plan for reducing personal health risks and improving or maintaining her/his health.

G. Appraise health-care careers according to these criteria: the roles performed (prevention, diagnosis, care and treatment, and support); level (entry, technical, and professional); and requirements for employment.

MATERIAL REFERENCED

APPLIED BIOLOGY/CHEMISTRY, Center for Occupational Research and Development

RECOMMENDED COURSE SCHEDULE

One hour class per day, five days per week, for one semester

PRINCIPLES OF TECHNOLOGY

Force Transformers

Power

Energy

Resistance

Rate

Work

Force

PRINCIPLES OF TECHNOLOGY

COURSE DESCRIPTION

This course is designed to increase the participant's general understanding of physics and the principles that undergird technology. In addition to building a foundation of the basics, the course also blends principles with practice as the student applies the learning in laboratory situations and prepares for high technology careers. The Principles of Technology addresses the concepts of force, work, rate, resistance, energy, and power and their related uses.

COURSE FOCUS

This course focuses on the application and hands-on experimentation as well as the principles of technology. Principles of Technology fills a need not met by many physics courses in which the emphasis is on academics only. This course provides students with skills designed to assist them in their future careers involving high technology.

GOALS AND OBJECTIVES

Instruction in technology-oriented fields requires an understanding of the systems that are combined in workplace equipment. Because skills specific to certain jobs are no longer adequate for a lifetime in a technology oriented career. people must understand the principles on which their work is based and, as the work place requirements change, be able to use that understanding to adapt.

Goals:

1. The student will learn principles of technology and will learn associated mathematics.

2. The student will recognize that technicians must understand basic technical principles, that these principles undergird the world of technology, and that these principles apply to the mechanical, fluid, electrical and thermal energy systems found in technological devices.

3. The student will develop confidence in her/his ability to understand and apply scientific concepts and principles.

Course Objectives:

After completion of this course, students will be able to:

A. Use basic principles, concepts and laws of physics and technology in practical applications.

B. Use mathematics skills including applications in algebra and trigonometry as problem-solving tools.

C. Analyze systems composed of subsystems in electronic, electrical, mechanical, thermal and fluid systems.

D. Use materials, processes, procedures, equipment, methods and techniques common to technology.

E. Use computers for information management, equipment and process control, and design.

F. Record, analyze, interpret, synthesize, and transmit facts and ideas with objectivity.

G. Communicate information by oral, written and graphical means.

Unit Objectives:

Unit 1: "Force"

Upon completion of this unit, the student will be able to:

A. Describe force using her/his own words.

B. Give examples of complex technological devices where force must be controlled, measured or applied.

C. Describe orally or in writing what force, pressure, voltage and temperature difference have in common.

D. Describe what happens to an object when forces on it are balanced and when forces on it are unbalanced.

E. Given the specific scale diagrams, fluid system situations, and conversion formulas, measure force in mechanical, fluid, electrical and thermal systems.

F. List occupations that require technicians to measure control, or otherwise deal with force in complex devices.

Unit 2: "Work"

Upon completion of this unit, the student will be able to:

A. Describe what is meant by work in general. Then describe work in mechanical, fluid, and electrical systems.

B. Describe how work in mechanical, fluid and electrical systems involves the presence of force and movement.

C. Identify SI and English units for work in mechanical, fluid, and electrical systems.

D. Identify the effects of work done in mechanical, fluid, and electrical systems.

E. Measure work in mechanical, fluid and electrical systems.

Unit 3: "Rate"

Upon completion of this unit, the student will be able to:

A. Describe what is meant by rate in general. Describe rate in mechanical, fluid, electrical and thermal systems.

B. Identify appropriate SI and English units for rate in all four energy systems.

C. Measure rate in mechanical, fluid, electrical and thermal systems.

D. Identify workplace applications where rate is measured and/or controlled.

Unit 4: "Resistance"

Upon completion of this unit, the student will be able to:

A. Describe what is meant by resistance in general. Then describe resistance in mechanical, fluid, electrical and thermal energy systems.

B. Explain how resistance in each energy system relates to the unifying principle of a "force" divided by a rate.

C. Identify SI and English units for resistance in each energy system.

D. Identify good and bad effects of resistance in each energy system.

E. Identify workplace applications where technicians measure or control resistance.

F. Measure resistance in mechanical, fluid, electrical and thermal energy systems.

Unit 5: "Energy"

Upon completion of this unit, the student will be able to:

A. Describe the nature of energy in mechanical, fluid, electrical and thermal systems.

B. Describe in writing what is meant by "potential energy."

C. Describe in writing what is meant by "kinetic energy."

D. Describe in writing the relationship between potential energy, kinetic energy and heat energy in the conservation-of-energy law.

E. Describe the relationship between work and energy.

F. Identify appropriate SI and English units for energy in each system.

G. Measure energy in each system.

H. Identify workplace applications where technicians measure or control energy.

Unit 6: "Power"

Upon completion of this unit, the student will be able to:

A. Describe what is meant by power in general. Then describe power in mechanical, fluid, electrical and thermal systems.

B. Explain how thermal power and thermal rate are the same.

C. Explain how power in each energy system relates to the unifying principle of work divided by time.

D. Explain why power can be described in terms of a "force" times a rate for mechanical, fluid and electrical systems.

E. Identify technical workplace situations where technicians measure or control power.

Unit 7: "Force Transformers"

Upon completion of this unit, the student will be able to:

A. Describe force transformers in general. Describe force transformers in mechanical, fluid and electrical systems.

B. Explain why force transformers form a unifying principle in mechanical, fluid and electrical systems.

C. List examples of force transformers in mechanical, fluid and electrical systems.

Unit 8: "Momentum"

Upon completion of this unit, the student will be able to:

A. Describe linear momentum.

B. Describe angular momentum.

C. State the law of conservation of momentum as it affects linear or angular motion.

D. Describe the relationship of impulse to change in momentum.

E. List examples of how momentum affects mechanical and fluid systems.

MATERIALS REFERENCED:

PRINCIPLES OF TECHNOLOGY, Center for Occupational Research and Development