# Career Development & Occupational Studies

## Core Curriculum

Standard 3b
Career Clusters—
Business/Information Systems

# Core Curriculum—Business/Information Systems

This section provides teachers with an organizational tool that connects the Career Development and Occupational Studies (CDOS) Learning Standard 3b with corresponding performance indicators. The goal of this core curriculum is to provide a user-friendly guide that links CDOS with other content areas and should provide educators with a framework for lesson plan development.

## Standard 3b: Career Clusters

Students who choose a career cluster will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

## Relationship to Other Content and Skill Areas

**Performance Indicator: Students apply knowledge/skills acquired in other content and skill areas to the business and information systems environment.**

**Students will:**

A. Relate English language arts to the business and information systems environment:
   1. Reading
   2. Writing
   3. Speaking and basic presentation skills
   4. Listening

B. Relate mathematics to the business and information systems environment:
   1. Graphic interpretation
   2. Forecasting
   3. Statistical analysis
   4. Ratios
   5. Percentages
   6. Algebra—spreadsheet function use
   7. Formula construction
   8. Calculations

C. Relate foundation skills to the business and information systems environment:
   1. Problem solving
   2. Critical thinking
   3. Decision making
   4. Research

### Discussion Questions

- What other content and skill areas do students need in order to successfully enter the business, multinational, information, and technologically based environment?

5. Organization and management
6. Planning
7. Self-management
8. Teamwork
9. Communication
10. Technology and information management
11. Diversity training

D. Relate computer information systems to the business and information systems environment:
   1. Preparing, maintaining, and interpreting information:
   2. Analyzing information
   3. Transmitting and distributing information
   4. Demonstrating acceptable basic technology-related skills
      a. Word processing
      b. Database
      c. Spreadsheets, charts, graphs
      d. Desktop publishing
      e. Presentation applications (e.g., multimedia)
      f. Internet use
      g. Web page/HTML program applications

## 1. Basic Business Understanding

**Performance Indicator: Students demonstrate an understanding of business, marketing, and multinational economic concepts; perform business-related mathematical computations; and analyze/interpret business-related numerical information.**

**Students will:**

A. Understand business concepts/characteristics:
   1. Nature of business
      a. Trends (e.g., e-commerce)
      b. Influential factors
         i. Social
         ii. Political
         iii. Economic
         iv. Technological
         v. Global
      c. Forms of business organization
         i. Proprietorship
         ii. Partnership
         iii. Corporation
         iv. Specialized
            *a.* Profit and nonprofit
            *b.* Joint venture
            *c.* Franchise
            *d.* Cooperative
         v. Characteristics of each organization
            *a.* Formation steps
            *b.* Advantages and disadvantages
   2. Identify social issues:
      a. Population/workforce
      b. Environmental
      c. Social responsibility
   3. Understand legal issues:
      a. Economic regulations
      b. Business protections (e.g., restrictive covenant, copyright, trademark)

### Discussion Questions

- What are the social, legal, and ethical issues and characteristics that confront all forms of business ownership?
- What is the role of microeconomics and macroeconomics in the global, financial, and economic decision-making process?
- How do communication, management, and marketing structures interact with and relate to the cultural, social, and economic aspects of multinational/global business?
- What are the marketing functions, systems, and characteristics that address the decisions of the marketing mix (product, price, promotion, and place)?

c. Protection of public interest (e.g., OSHA, ADA, EEOC)
d. Regulations (e.g., international, national, state, local)
e. Business and personal taxation
f. Labor

4. Ethical issues and dilemmas
   a. Confidentiality (e.g., trade secrets, privacy)
   b. Environmental impact (e.g., pollution, deforestation)
   c. Global, national, state, and local
   d. Social responsibilities

B. Understand basic economic concepts:
1. Making economic decisions
   a. The economic way of thinking
   b. Individual decisions
   c. Group decisions
   d. Private sector decisions
   e. Public sector decisions
2. The microeconomic perspective
   a. Demand: achieving consumer satisfaction
   b. Supply: producing goods and services
   c. Demand, supply, and prices
   d. Business firms in the economy
   e. Perfect competition and monopoly
   f. Monopolistic competition
   g. Improving the market economy
   h. The labor market and determining personal income
3. The macroeconomic perspective
   a. Measuring aggregate economic activity
   b. Distribution of income
   c. Unemployment
   d. Inflation
   e. Money, the Federal Reserve System, and banking
   f. Monetary policy
   g. Taxes
   h. Fiscal policy
   i. Economic growth
4. Personal finance and investment
5. World economy

C. Understand multinational/global business:
1. Role of multinational business
   a. Import
   b. Export
2. Multicultural communications
   a. Cultural diversity (e.g., different languages, nonverbal communication)
   b. Communications strategies
      i. Nonverbal
      ii. Oral and written
      iii. Technical
   c. Environment
      i. Social
      ii. Political
      iii. Legal
   d. Multinational/global business management
      i. Organizational structures
      ii. Human resources
      iii. Entrepreneurial opportunities

## Discussion Questions

- What are the aspects of entrepreneurship as a form of business?
- How are mathematics skills used to accomplish business-related applications?

iv. Conversion
*a.* Monetary
*b.* Measurement

e. Multinational marketing
i. Language
ii. Customs/traditions/etiquette
iii. Legal aspects
iv. Politics
v. Technology
*a.* Time factor
*b.* Monetary factors

D. Understand marketing concepts:
1. Basics (e.g., functions, mix, concept, utility)
2. Product management (planning, development, product, life-cycle)
3. External factors
a. Government regulations
b. Economic environment
c. Cultural differences
d. Technology
e. Special interest groups
f. Competition
4. Financial management
a. Pricing objectives
b. Calculating price
c. Purchasing process
d. Forecasting
5. Distribution systems
a. Channels of distribution
b. Intermediaries
c. Inventory control
6. Promotion/advertising/public relations
a. Media
b. Budgets
c. Technology
d. Forms of sales promotion
e. Promotion programs
f. Public relations plans
g. Personal selling
h. Sales approaches
i. Functions of sales personnel
7. Market research
a. Purposes
b. Data collection, sampling, and analysis
8. Market types/characteristics
a. Buying motives
b. Market segmentation
c. Market positioning for competitive edge
d. Target market
9. Marketing plan
a. Development
b. Strategic and tactical planning
10. Trends and innovations in marketing
a. Societal changes
b. Technological innovations

11. Ethics
    a. Code of behavior
    b. Truth in advertising, selling, and packaging

E. Understand the nature of entrepreneurship:
1. Characteristics of the entrepreneur
2. Advantages and disadvantages
3. Business plan
4. Financing (e.g., raising capital)
5. Opportunities
6. Legal issues (see IC)
7. Organizational structures (see IA3)
8. Marketing (see IV)
9. Economics (see III)
10. Finance/accounting
11. Global markets

F. Understand business-related mathematical applications:
1. Computation
    a. Accounting
    b. Income taxes
    c. Financial records
    d. Ratios and percentages
    e. Depreciation
2. Interpretation
    a. Tables
    b. Charts and graphs
    c. Financial reports
3. Analyzing
    a. Amortization
    b. Real versus nominal
    c. Statistics
    d. Economic indicators
4. Forecasting
    a. Stock markets
    b. Sales
    c. Inventory
    d. Earnings

## 2. Business-Related Technology

**Performance Indicator: Students select, apply, and troubleshoot hardware and software used in the processing of business transactions.**

**Students will:**

A. Acquire keyboarding skills that include:
1. Use various keyboard features (e.g., 10-key pad, function keys)
2. Touch keyboarding skills at acceptable speed and accuracy levels (e.g., 30 net words per minute)
3. Entry and manipulation of numeric data using the touch method on a 10-key pad
4. Efficient manipulation of pointing devices (e.g., mouse, trackball, joystick)
5. Experience with voice-recognition software as an input device

**Discussion Questions**

- Why is the selection and utilization of appropriate technology to resolve business-related questions and challenges important to a business?

B. Develop software skills to:
   1. Use word processing software to create, edit, and print reports, tables, correspondence, and other documents
   2. Use spreadsheet software to design, create, manipulate, update, and/or print data and charts
   3. Use database software to plan, create, manipulate, and print reports and other documents
   4. Use presentation software and multimedia to design, create, and import
      a. Data
      b. Graphics
      c. Scanned images
      d. Photos
      e. Video
      f. Sound/audio (e.g., CD, downloaded music)
   5. Edit, format, sequence, and produce a variety of presentations and related materials (e.g., notes page, handouts, outline)
   6. Design and develop a website using appropriate software
      a. Enter and format text
      b. Create and insert hyperlinks
      c. Incorporate clip art, images, and links

C. Identify and select software for:
   1. Applications and other software to perform business tasks and solve problems
      a. Determine what software package will fulfill task as related to business as well as personal use
      b. Establish standards for business use
      c. Evaluate success of software solution
   2. Evaluation of software programs
      a. Appropriateness (e.g., cost, licensing, utility, platform)
   3. Awareness of emerging application software

D. Troubleshoot to:
   1. Install, customize, upgrade, and maintain application software
   2. Use reference materials for diagnosing and solving software/hardware problems
      a. Online help
      b. Bulletin boards
      c. Tutorials
      d. Manuals

E. Understand hardware:
   1. Types
      a. Fax
      b. Scanners
      c. Copiers
      d. Digital cameras
      e. Cellular phones
      f. New and emerging technologies
   2. Purpose and operation of hardware components
   3. Choosing hardware components
      a. Level of choice
      b. Specific tasks versus multitude of tasks
   4. Various configurations of hardware components
   5. Ergonomic principles in configuration of workstations
   6. Emerging hardware technology

## 3. Information Management/Communications

**Performance Indicator: Students prepare, maintain, interpret/analyze, and transmit/distribute information in a variety of formats while demonstrating the oral, nonverbal, and written communication skills essential for working in today's international service-/information-/technological-based economy.**

**Students will:**

A. Use written communication skills to:
   1. Prepare business letters, memoranda, and reports using correct style, format, and content
   2. Compose correspondence appropriate for specific audiences
   3. Utilize a variety of references and resources
   4. Develop and present industry-specific reports incorporating technical writing skills
   5. Proofread documents for correct grammar, spelling, and punctuation
   6. Research and analyze business-related reports

**Discussion Questions**

- How are written, oral, listening, reading, and technology skills essential to effective communication in the business environment?

B. Use oral communication skills to:
   1. Plan, prepare, present, and evaluate informal/formal oral communication based on purpose and audience
   2. Utilize visual aids and handouts, voice, and body language to effectively complement a message
   3. Ask questions to solicit and clarify information (e.g., interview, task assignment)
   4. Express messages effectively

C. Use listening skills to:
   1. Determine when listening whether notes, questions, and/or participation in a discussion are required
   2. Evaluate the speaker's purpose and message
   3. Interpret nonverbal clues in the speaker's message
   4. Follow oral directions

D. Use reading skills to:
   1. Evaluate the writer's purpose and message
   2. Follow written directions
   3. Analyze and interpret printed and electronic correspondence (e.g., Internet, white papers)
   4. Skim, scan, and read for detail based on purpose
   5. Read and comprehend technical writing (e.g., manuals, reports, online documents)

E. Use telecommunication applications in:
   1. Voice communication
      a. Telephone
      b. Voice messaging
      c. Computer to telephone connections
      d. Personal information systems to computer
   2. Written communication
      a. E-mail
      b. Attachments
   3. Fax communication
   4. Videoconferencing
   5. Research
      a. Internet
      b. Intranet
   6. Commerce
      a. E-commerce
      b. Online commercial research
   7. Technical needs
      a. LANs
      b. WANs
      c. Service providers

## 4. Business Systems

**Performance Indicator: Students demonstrate an understanding of the interrelatedness of business, social, and economic systems/subsystems.**

**Students will:**

A. Understand economic systems (see 1B).

B. Understand social systems:
   1. Legal systems
      a. Court systems
      b. Business law (e.g., contracts, employment, consumer, corporate)
      c. Ethics and the law

C. Understand financial/administrative systems:
   1. Financial
      a. Accounting
      b. Credit and collection plans
      c. Insurance
      d. Monetary
   2. Administrative/management
      a. Policies and procedures
      b. Records/data management
      c. Human resources/personnel
      d. Inventory

D. Understand information systems:
   1. Personnel
   2. Equipment
   3. Financial records
   4. Inventory
   5. Communication (e.g., e-mail)

E. Understand production/manufacturing systems:
   1. Planning
   2. Producing
      a. Quality assurance
      b. Standards
         i. National
         ii. State
         iii. Safety
         iv. Environmental
   3. Marketing

**Discussion Questions**

- How are systems used to organize and operate a business?

## 5. Resource Management

**Performance Indicator: Students identify, organize, plan, and allocate resources (e.g., financial, materials/facilities, human, time) in demonstrating the ability to manage their lives as learners, contributing family members, globally competitive workers, and self-sufficient individuals.**

**Students will:**

A. Understand business organization management:
   1. Organizational structure
   2. Factors of production
      a. Land
      b. Labor
      c. Capital
      d. Time

B. Understand human resources management:
   1. Planning
   2. Recruiting and selecting personnel
   3. Compensation
      a. Salaries
      b. Incentives
      c. Employee benefits
   4. Training and development
   5. Performance appraisal
      a. Promotion
      b. Transfer
      c. Termination

C. Understand personal resources management (see A, B).

**Discussion Questions**

- What is needed for management of personal and human resources and business organizations?

## 6. Interpersonal Dynamics

**Performance Indicator: Students exhibit interpersonal skills essential for success in the multinational business world, demonstrate basic leadership abilities/skills, and function effectively as members of a work group or team.**

**Students will:**

A. Understand and demonstrate skills for success in a multinational business world:
   1. Personal qualities related to employability
   2. Team member skills needed to accomplish a task
   3. Interpersonal skills for working with and for others
      a. Give/receive constructive criticism
      b. Effective time management

B. Understand leadership abilities and skills:
   1. Styles
   2. Traits of leaders (e.g., ability to motivate, delegate)
   3. Skills (e.g., plan, organize)

C. Function effectively as members of a work group/team by:
   1. Demonstrating sensitivity (e.g., cultural diversity)
   2. Applying principles of group dynamics and participation in team activities
   3. Communicating
      a. Listening skills
      b. Appropriate response
      c. Feedback
   4. Understanding the chain of command/purpose of authority
   5. Understanding corporate culture

# Career & Development Occupational Studies

## Sample Activities

Standard 3b
Career Clusters—
Business/Information Systems

# Career Clusters—Business/Information Systems Sample Activities Overview

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Possible Connecting Standards

ELA = English Language Arts Standards
LOTE = Languages Other than English Standards
MST = Mathematics, Science, and Technology Standards
H/PE/FCS = Health, Physical Education, Family and Consumer Sciences Standards
SS = Social Studies Standards
Arts = The Arts Standards

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Toy Makers

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 5 days

## OBJECTIVE(S)

Students research entrepreneurial skills used in creating and producing toys for preschoolers.

## DESCRIPTION OF ACTIVITY

- Present the activity to students as follows:
  "You and your friends have recently been helping at a local daycare center for preschoolers. You notice that none of the toys available at the center adequately teach the children about colors, shapes, etc."
- In teams, students create a toy appropriate for a preschooler. The toy must teach one of the following:
  - ❍ Colors
  - ❍ Sizes and/or shapes
  - ❍ Numbers
- The toy must meet the following requirements:
  - ❍ It must be made of recyclable materials.
  - ❍ It must not have any small pieces that can be ingested by a young child.
  - ❍ It must be safe for children.
  - ❍ It must be a hands-on "action" toy.
- A preschooler must participate in the use of the toy.
- Student teams present a short presentation summarizing the process used to develop the toy. The following points must be included:
  - ❍ Purpose of the toy
  - ❍ How the toy is used
  - ❍ Each team member's role in creating the toy
  - ❍ Entrepreneurial skills used in creating and producing the toy
  - ❍ Strategies used in reaching a decision
  - ❍ Reason(s) for discarding alternative choices

## MATERIALS/RESOURCES

## COMMENTS/MODIFICATIONS

- Host a marketing fair.

## SOURCE/CREDIT

Submitted by JoAnn Bagnoli, Fort Plain High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | • |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | • |
| 4. Business Systems | |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | • |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | • |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Mind Your Own Business

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 1–1.5 days

## OBJECTIVE(S)

Student groups create and illustrate the perfect place to work.

## DESCRIPTION OF ACTIVITY

- As a group, you create and illustrate the "perfect" place to work.
- You may decide to manufacture a product, provide a service, manage information, etc.
- You may decide to help people in need, build bridges, sell "great ideas," etc.
- You may decide to do a combination of things (products and services) in order for each member of your group to be happy at work.
- You decide which job each of you will take within this business. You need to include a leader or manager of the business (someone who is in charge). What things will each of you be responsible for to make the workplace or business successful?
- You may also decide what kind of work environment you want; factors to consider include physical appearance, setting, work schedule, relationships among yourselves (supervisors, middle management), etc.
- As in many workplaces, you are short-staffed. There is more work than your team can handle! You may get more staff, but there is no guarantee. How would you divide your current workload if you lost a member of your team to another workplace? How would you recruit new members to your workplace?

## MATERIALS/RESOURCES

- Large pieces of construction paper
- Markers
- Crayons

## COMMENTS/MODIFICATIONS

- Allow the groups to develop and illustrate their workplaces using pictures, words, and symbols. About halfway through the process, inform the leader or manager of each group that their workplace has fallen on hard times and they must dismiss one member of their work team. The leader or manager of each group must decide the appropriate method of completing this task and announcing it to their group. Allow groups to debrief by writing a narrative of the process used and their reaction to this process (see page 224). Members of the class who were "laid off" must decide what they will do; they might decide to form a new workplace, try to join another workplace by developing a new position within that workplace, etc.

## SOURCE/CREDIT

Taken in part from *Out of Bounds,* developed by NYS Career Options Institute and modified by Kathie DeKalb, Fort Plain High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | • |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | |
| 4. Business Systems | |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | |
| **Career Development (1)** | |
| 1. Complete development of career plan | • |
| 2. Apply decision-making skills in selection of a career option | • |
| 3. Analyze skills and abilities in a career option | • |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | • |
| 3. Personal Qualities | • |
| 4. Interpersonal Skills | • |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | • |

# Mind Your Own Business

## *Sample Debrief*

1. How did you choose your group leader/manager?

2. What leadership traits does this person have to make him/her effective as the person "in charge"?

3. What changes did you notice in the workplace you participated in as the activity progressed?

4. What reactions did you have to being laid off from your position?

5. What reactions did you have to a new person coming into your workplace and/or to losing a team member?

6. How did the changes in personnel influence your group's interaction and/or progress?

7. What reactions did you have to the changes in your original workplace at the end of the activity?

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Marketing Maneuvers

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 4–5 days

## OBJECTIVE(S)

Students are introduced to marketing maneuvers, including the ways to package, promote, and deliver a product.

## DESCRIPTION OF ACTIVITY

- Present the activity to students as follows:
  "You and your team are employed by an advertising firm. Your boss has asked you and your team to create a commercial for a product or service. "
- Students must create a commercial that meets following criteria:
  - ❍ The commercial must be set in any time period, other than the 1990s, and must reflect some aspect of that culture.
  - ❍ The product or service must be an original product or service that resolves a problem.
  - ❍ The commercial must target a particular market (e.g., small children, adolescents, sports enthusiasts, music lovers, etc.).
  - ❍ The commercial must be a TV ad (lasting no more than one minute), a radio ad (lasting one to two minutes), or a magazine ad.
- Students must summarize the project:
  - ❍ Explain the process used to reach a final decision on your commercial.
  - ❍ State the target market.
  - ❍ Describe the role each team member played in constructing the commercial.

## MATERIALS/RESOURCES

## COMMENTS/MODIFICATIONS

Marketing can be described as follows:

- Marketing is an art. The way you package, promote, and deliver your product, your service, or even yourself creates a lasting impression. Your choices can either entice the consumer or send him/her running off—no matter how great you and/or your product have proven to be.
- Successful marketing skills involve creativity, thoughtfulness, and the ability to predict consumer needs and/or wants. Sometimes you may have to build a market in order to convince consumers of their need or want for a product.

## SOURCE/CREDIT

Submitted by JoAnn Bagnoli, Fort Plain High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | • |
| 2. Business-Related Technology | • |
| 3. Information Management/ Communication | • |
| 4. Business Systems | |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | |
| 6. Managing Information | |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | • |
| Social Studies | • |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Moving Out

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 3–5 days

## OBJECTIVE(S)

Students calculate and consider what it takes to move away from home.

## DESCRIPTION OF ACTIVITY

- Present the activity to students as follows:
  "At the high school level, many students have one goal in life: They want to move out! Here is a chance to see what moving out is all about."
- Students make a list of 20 things they will need to live on their own, calculating the cost of each item.
- With the help of the local newspaper, students look for a job to help fund their independence. They must remember that they have to select a job for which they are qualified.
- With the help of the local newspaper, students look for an apartment, and they estimate the cost of rent and utilities per month.
- Students prepare a monthly budget based on salary and expenses.
- Students create a grocery list and a menu for one day. Using the local newspaper, they estimate the cost of eating for one day, one month, and one year.
- Students write a reflection paper based on findings. They may find out school is not such a bad place after all!

## MATERIALS/RESOURCES

- Local newspapers
- Documents for:
  - 20 things you will need to live on your own
  - estimating rent and utilities
  - preparing monthly budgets based on salary and expenses
  - creating a grocery list and menu for one day and one month

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

Submitted by Business Department, Burnt Hills-Ballston Lake High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | • |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | |
| 4. Business Systems | |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | • |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Characteristics of the Entrepreneur

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 4–5 days

## OBJECTIVE(S)

Students research entrepreneurs from the past. They compare characteristics of entrepreneurs during the pre-World War II era with post-1970 entrepreneurs.

## DESCRIPTION OF ACTIVITY

- Present the activity to students as follows:
  "Successful business people of the pre-World War II era used resources and faced obstacles that were quite different from those faced by the present-day entrepreneur. Industrial giants of the 1940s were able to amass immense wealth and wield power unlike the government-regulated businesses of the 1990s. That's not to say, however, that today's young entrepreneurs are daunted by the restrictions imposed upon them. The entrepreneurial spirit and drive of yesteryear continues to be defined in countless new technological and service enterprises as well as in the reinvention of the old."
- Students form teams. Each team produces a comparison of the past with the present.
- Students select one entrepreneur from the pre-World War II era and one modern entrepreneur (from 1970–today). they may choose from the list provided or select one on their own (see page 228).
- Students use the outline provided to research the information on each individual. They may use periodicals and/or the Internet. They will be graded on the thoroughness of their outline, so they should fill in as much information for the outline as possible.
- Students create a wall design displaying their information. They should divide it into two sections (one for each entrepreneur) and be creative.
- Students present their information in a short oral report that includes:
  - The vision the individual used to create his/her product or service
  - What made it easy or difficult for each individual to pursue his/her dream
  - What assets the individual possessed (money, talent, etc.)
  - What difficulties the pre-World War II entrepreneur would face if he/she had to start a business today
- Students discuss the role each team member played in completing the project.

## MATERIALS/RESOURCES

- Informational outline (see page 228)
- Computer
- Internet access (optional)

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

Submitted by JoAnn Bagnoli, Fort Plain High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | • |
| 4. Business Systems | |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | |
| 6. Managing Information | |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | • |
| The Arts | • |

# Characteristics of an Entrepreneur

## *Informational Outline*

I. Background of Entrepreneur

1. Name of entrepreneur
2. Name of company
3. Profile of individual
    a) age
    b) education
    c) skills, abilities, and interests
4. What motivated the individual to start a business? Define the niche.

II. Background of Company

1. What does the company produce or provide?
2. What were some of the early successes and failures of the business? of the entrepreneurs?
3. Is there a philosophy by which the business is run?
4. What has made the business successful?

List of choices:

### Pre-World War II

J.P. Morgan

J.D. Rockefeller

William Randolph Hearst

Joseph Kennedy

J. Paul Getty

### Modern Day

Ben and Jerry's Ice Cream

Nantucket Nectars

Bill Gates

Steve Jobs, Apple Computers

Tommy Hilfiger

Donald Trump

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** International Business Travel

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2–3 class periods

## OBJECTIVE(S)

Students use the Internet for research purposes. They demonstrate the ability to prepare a structured itinerary. In addition, they practice making wise consumer decisions and demonstrate effective presentation skills.

## DESCRIPTION OF ACTIVITY

This project requires students to assume the role of an employee of a business. This person has been assigned the task of researching a country where the company is hoping to expand. They find facts about this country and make travel plans for their business manager to attend a meeting while in this country. They should base their research on the assumption that the meeting will be held in the country's capital city. Students research:

- Facts about the country: population, geographic area, demographics, government structure, and economic structure.
- Economic facts: imports, exports, chief agricultural products, foreign exchange, currency, and transportation modes available.
- Travel information: methods/cost of travel to the country, methods of travel while in the country, hotel accommodations, and communication modes available in the country.
- Culture and customs: customs that affect business relations, holidays, major religions, and etiquette.
- Eating habits: general cost of meals/restaurants, whether American food is served in the country, and times people tend to eat.

ITINERARY:

- After research is completed, an itinerary is prepared detailing the business manager's visit to the country. This itinerary should cover the visit from the moment the executive walks out the door en route to the airport to the moment s/he lands safely back in the United States and arrives in _____. Students should allow adequate travel time, and include all essential information.
- The trip should last no longer than three business days. The budget should be between $1,000 and $2,000, though the lower the cost, the more impressed the business manager will be.

PRESENTATION:

- Students prepare a presentation to share their research findings with the rest of the class.

## MATERIALS/RESOURCES

- Computer
- Internet access

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

Submitted by Jennifer Sanders, Burnt Hills-Ballston Lake High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | • |
| 4. Business Systems | |
| 5. Resource Management | • |
| 6. Interpersonal Dynamics | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Preparation for the Workplace

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2–4 hours

## OBJECTIVE(S)

Each student completes a task on an assembly line as an apprentice within a group. This session provides learning skills in a given industry in two ways—individual training and group training.

## DESCRIPTION OF ACTIVITY

- Teacher contacts a local business that provides students with the opportunity to work as apprentices. [Note: I visited a sheet-metal plant that prepares covers and does assembly of the CPU for computers. They allowed us to bring students to work on the computer assembly line to build a computer case.]
- Students learn a worker's job on the assembly line.
  - ❍ They take the place of the worker for a half hour; the worker helps to ensure that they keep up with the line.
  - ❍ They perform the worker's job without supervision for a half hour.
  - ❍ They learn the next job on the assembly line in order to keep the line moving in case of emergency.
- Students receive group training.
  - ❍ They are divided into three groups for parts assemble training: first group receives complete training, second group receives random training, and third group receives no training.
  - ❍ Each group fully assembles the product within a specified period of time.
- Student groups come together to discuss the value of training versus no training or partial training.
  - ❍ Students reflect on the skills that required no training: observation of assembly parts, view of finished product and ability to disassemble it mentally, and observation of connecting parts.
  - ❍ They reflect on the problems that arose in each training method
- Students discuss if all employees should know the entire product assembly.
- Students discuss different pay scales for assembly work and salaried work.
- Students motivational techniques that can be used to keep product at maximum levels?
- Students discuss the method of reward that appears to be most beneficial to an assembly worker
- Students write a training manual for the position they learned for the project.
- Students determine whether they would like this work for a long or short time.
- Students write letters to friends, describing their training experience and their views and opinions, as well as real workers', on working on an assembly line for life.

## MATERIALS/RESOURCES

## COMMENTS/MODIFICATIONS

NOTE: You may design your own assembly line. For example, put together a booklet (cover, photographs, etc.); build a car, plane, house, barn, etc. using Legos or Lincoln Logs; organize a cafeteria food line for a sports dinner; or plan a computer software project requiring design, data entry, and printing. Develop trainers, using this section.

## SOURCE/CREDIT

Submitted by Betty Lou Herter, Bath/Haverling Central School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | |
| 4. Business Systems | • |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | • |
| 4. Interpersonal Skills | • |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Business/Information Systems**

**Title of Activity:** Getting the News

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2–3 class periods

## OBJECTIVE(S)

Students read newspapers and record, discuss, and present to the class the Top 10 newsmakers of the week.

## DESCRIPTION OF ACTIVITY

- Divide the class into groups of four. Each member will have a section of a major newspaper (e.g., *USA Today*, *The New York Times*, *The Wall Street Journal*). The students will read and research a week's worth of stories and discuss and prioritize them until they have selected the Top 10 newsmakers (people or events) of the week.
- They then create a chart of their selections to present to the class. It may be created as a tag board poster or PowerPoint presentation, or it may use other appropriate software programs. Graphics are available online at www.usatoday.com. Student groups will then present the chart to the class and initiate discussion concerning the article topics and justification of their prioritizing method.
- As a follow-up activity, each student selects one of the articles and provides a written reaction to the article's content in a writing journal. The student must provide a written response in paragraph form to the following questions:
  - ❍ What are the main points of the article?
  - ❍ What aspect of material covered in class does this article relate to?
  - ❍ How can you use this information in your life now or in the future?
  - ❍ What prediction can you make on the basis of the facts of the article?

## MATERIALS/RESOURCES

- Computer
- Software (e.g., PowerPoint, Excel)
- Internet access
- Websites (www.usatoday.com, www.nytimes.com, www.wsj.com)

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

Submitted by Gregory Pigeon, Riverside High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Business/Information Systems (3b)** | |
| 1. Basic Business Understanding | |
| 2. Business-Related Technology | |
| 3. Information Management/ Communication | • |
| 4. Business Systems | |
| 5. Resource Management | |
| 6. Interpersonal Dynamics | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | • |
| 6. Managing Information | |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | • |
| The Arts | • |

# Cross Reference Checklist

## Business/Information Systems Sample Activities

| Sample Activities | CDOS 3b | CDOS 1 | CDOS 2 | CDOS 3a | ELA | LOTE | MST | H/PE /FCS | SS | ARTS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Toy Makers | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | | |
| 2. Mind Your Own Business | ✓ | ✓ | ✓ | | ✓ | | | | | ✓ |
| 3. Marketing Maneuvers | ✓ | | | ✓ | ✓ | | | ✓ | ✓ | |
| 4. Moving Out | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | |
| 5. Characteristics of the Entrepreneur | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | ✓ |
| 6. International Business Travel | ✓ | | ✓ | ✓ | ✓ | | ✓ | | | |
| 7. Preparation for the Workplace | ✓ | | ✓ | ✓ | ✓ | | | | | |
| 8. Getting the News | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | ✓ |

Possible Connecting Standards

ELA = English Language Arts Standards
LOTE = Languages Other than English Standards
MST = Mathematics, Science, and Technology Standards
H/PE/FCS = Health, Physical Education, Family and Consumer Sciences Standards
SS = Social Studies Standards
Arts = The Arts Standards

# Career Development & Occupational Studies

## Core Curriculum

Standard 3b

Career Clusters—Health Services

# Core Curriculum—Health Services

This section provides teachers with an organizational tool that connects the Career Development and Occupational Studies (CDOS) Learning Standard 3b with corresponding performance indicators. The goal of this core curriculum is to provide a user-friendly guide that links CDOS with other content areas and provide educators with a framework for lesson plan development.

## Standard 3b: Career Clusters

Students who choose a career cluster will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

### 1. Academic Foundations

**Performance Indicator:** **Students apply knowledge/skills acquired in academic subjects to the health care environment.**

**Students will:**

A. Relate English language arts to health services:
   1. Reading
   2. Writing
   3. Speaking
   4. Listening

B. Apply natural sciences to health services:
   1. Anatomy and physiology
   2. Biology
   3. Physics
   4. Chemistry
   5. Microbiology
   6. Nutrition

C. Apply mathematics to health care:
   1. Statistics
   2. Measurement
   3. Ratio and proportions
   4. Graphing and timelines
   5. Algebra

D. Understand the impact of social sciences in the health care system:
   1. Psychology/life cycles
   2. Sociology/cultures
   3. Economics
   4. Government

E. Understand historical perspectives related to health care.

**Discussion Questions**

- What academic content and skills do students need in order to successfully enter the health care environment?

F. Apply foundation skills:
   1. Problem solving
   2. Critical thinking
   3. Research

## 2. Health Care Systems

**Performance Indicator: Students understand the current health care system and its impact on health careers.**

**Students will:**

A. Understand service delivery settings (e.g., hospital, clinic, laboratory, office, home).

B. Understand payment systems (e.g., health maintenance organization, managed care, Medicaid/Medicare).

C. Identify trends:
   1. Economic (e.g., decision making, profit-driven)
   2. Demographic
   3. Technological

D. Identify career choices in health care:
   1. Diagnostic cluster
   2. Therapeutic cluster
   3. Environmental cluster
   4. Information services

**Discussion Questions**

- What factors currently drive the health care system?

## 3. Health Maintenance

**Performance Indicator: Students develop knowledge of the concept of optimal health and identify factors that affect health maintenance.**

**Students will:**

A. Define types of health:
   1. Physical
   2. Mental
   3. Social

B. Identify and understand factors that adversely affect health:
   1. Environmental
   2. Socioeconomic (e.g., costs, insurance, access)
   3. Heredity/genetics
   4. High-risk behavior

C. Identify and understand factors that promote health:
   1. Preventive medicine
   2. Positive personal health habits

D. Identify and understand alternative health practices (e.g., massage therapy, acupuncture).

E. Identify community health resources.

F. Describe perceptions of health maintenance:
   1. Beliefs (e.g., cultural, societal)
   2. Peer/media influences
   3. Political influences

**Discussion Questions**

- What concepts will help students practice and advocate for a healthy life style?

## 4. Legal and Ethical Responsibilities

**Performance Indicator: Students know the importance of performing a role in the health care system in accordance with laws, regulations, policies, ethics, and the rights of clients.**

**Students will:**

A. Identify and understand legal issues related to health careers:
   1. Licensure/certification
   2. Sources of regulations
   3. Scope of practice for licensed practitioners
   4. Legal implications for unlicensed practitioners
   5. Institutional policies and procedures
   6. Civil
   7. Criminal

**Discussion Questions**

- What legal and ethical issues arise in providing care to the consumer?

B. Identify and understand ethical issues related to health careers:
   1. Code of ethics
   2. Consumer rights
   3. Ethical decision making

C. Identify and understand responsibilities related to health careers:
   1. Employer
   2. Employee
   3. Consumer
   4. Reportable incidents

## 5. Safety

**Performance Indicator: Students identify safety hazards in a health care setting and prevent illness or injury through safe work practices.**

**Students will:**

A. Identify and understand safety hazards in health care facilities:
   1. Fire
   2. Electrical
   3. Physical
   4. Biological
   5. Chemical
   6. Radiation

**Discussion Questions**

- What safety issues need to be addressed in the health care setting to prevent injury and illness?

B. Identify and understand prevention of injury in health care facilities:
   1. Standard precautions
   2. Body mechanics
   3. OSHA regulations

C. Identify and understand safety responsibilities and accident prevention:
   1. Employer development and implementation of safety plans
   2. Student/employee adherence to policy and procedure manuals for emergency response
   3. Consumer guides

## 6. Communications

**Performance Indicator:** **Students communicate information in a variety of formats and media.**

**Students will:**

A. Understand medical terminology and abbreviations.

B. Develop and practice elements of professional communication:
   1. Verbal and nonverbal language
   2. Listening skills
   3. Observation skills
   4. Confidentiality of patient information
   5. Interpersonal skills
   6. Telephone skills

C. Understand medical documentation:
   1. Legal implications
   2. Accuracy and clarity
   3. Subjective/objective observations

D. Understand and use information systems:
   1. Accessing and processing information
   2. Data security and confidentiality
   3. Resource management
   4. Consumer database

E. Develop job-seeking skills:
   1. Resume writing
   2. Interview skills

**Discussion Questions**

- What communication skills will an individual need to be an effective health care worker?

## 7. Interpersonal Dynamics

**Performance Indicator:** **Students interact effectively and sensitively with all other members of the health care team in order to provide high-quality client care.**

**Students will:**

A. Develop team-building skills and behaviors within the health care setting(s).

B. Understand functions and roles within a health care team(s).

C. Develop positive communication skills:
   1. Cooperation
   2. Listening
   3. Diversity/cultural issues
   4. Small group interactions
   5. Classroom discussions
   6. Community relations

D. Understand leadership:
   1. Characteristics
   2. Styles
   3. Problem-solving methods
   4. Goal setting
   5. Decision-making methods

E. Develop conflict resolution skills.

F. Understand professionalism in the health care system:
   1. Definition
   2. Organizations (professional, student)

**Discussion Questions**

- What qualities and skills should students develop to be successful members of a health care system?

# 8. Technical Skills

**Performance Indicator:** **Students identify procedures within the scope of practice and job descriptions, and perform them accurately and in a timely fashion.**

**Students will:**

A. Understand the scope of health care occupations.

B. Identify the hierarchy of broad-based common health care skills.

C. Apply safe practices in the health care setting.

D. Understand resource management in the health care setting.

E. Develop organizational skills.

F. Understand and practice monitoring and documenting client status.

G. Develop and practice specific skills:
   1. Standard and universal precautions
   2. Transfer techniques
   3. Body mechanics
   4. Medical asepsis
   5. Isolation techniques
   6. Vital signs
   7. Observations/data collection
   8. First aid/CPR
   9. Personal care

**Discussion Questions**

- What fundamental technical skills are required for the health care worker to provide quality care?

# Career & Development Occupational Studies

## Sample Activities

Standard 3b

Career Clusters—Health Services

# Career Clusters—Health Services Sample Activities Overview

| Sample Activities | Page | CDOS and Possible Connecting Standards |
|---|---|---|
| Financing Issues in Health Care Facilities | 242 | CDOS; ELA; MST; SS |
| Understanding Health Care Service Delivery | 243 | CDOS; ELA; MST |
| Medical Conditions and the Health Services Available | 244 | CDOS; ELA; MST; Arts; H/PE/FCS |
| Culture and History of Health Care | 245 | CDOS; ELA; SS |
| Genetic Discoveries—A Historical Perspective | 246 | CDOS; ELA; MST |
| Mathematical Concepts—Bacteria | 247 | CDOS; ELA; MST; SS |
| Role and Responsibilities of Health Care Workers | 248 | CDOS; ELA |

Possible Connecting Standards

ELA = English Language Arts Standards
LOTE = Languages Other than English Standards
MST = Mathematics, Science, and Technology Standards
H/PE/FCS = Health, Physical Education, Family and Consumer Sciences Standards
SS = Social Studies Standards
Arts = The Arts Standards

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Financing Issues in Health Care Facilities

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 weeks

## OBJECTIVE(S)

Students analyze financial matters in health care facilities.

## DESCRIPTION OF ACTIVITY

- Students are given annual reports (and other materials) for various health care facilities in urban, suburban, and rural localities.
- They collect data on outpatient and inpatient revenues for various facilities.
- Using a spreadsheet program, students create a data table of this information.
- They then create bar graphs and other data displays that show how outpatient and inpatient revenues compare across facilities and regions.
- Students write a brief essay describing the results of their analyses.

## MATERIALS/RESOURCES

- Annual reports from health care facilities
- Microsoft Excel, or other spreadsheet program

## COMMENTS/MODIFICATIONS

- The activity can be modified to examine trends over time (1994 through 1999).

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | • |
| 2. Health Care Systems | • |
| 3. Health Maintenance | |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | |
| 6. Communications | • |
| 7. Interpersonal Dynamics | |
| 8. Technical Skills | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | • |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | • |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Understanding Health Care Service Delivery

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 1 week

## OBJECTIVE(S)

Students understand the challenges to health care service delivery created by the changing needs of the elderly population.

## DESCRIPTION OF ACTIVITY

- Teacher uses graphs to illustrate the demographics of our aging population and initiates class discussion about the health needs of the elderly.
- As a group, students discuss these health needs, breaking them down by different segments of the elderly population: ages 50-65; ages 66-75; and ages 76 and older.
- Students collect information regarding services required by their own elderly family members (e.g., inpatient vs. outpatient services, living arrangements, pharmaceutical needs).
- Students also discuss the implications of the cumulative information in terms of how their community should plan for its elderly population.
- For homework, each student writes a summary of the possible impact on the community, using the information collected in class.

## MATERIALS/RESOURCES

- Construction paper or blackboard for depiction of data

## COMMENTS/MODIFICATIONS

- Students may create graphs to depict the data collected.

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | |
| 2. Health Care Systems | • |
| 3. Health Maintenance | |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | |
| 6. Communications | |
| 7. Interpersonal Dynamics | |
| 8. Technical Skills | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | • |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Medical Conditions and the Health Services Available

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 3–4 weeks

## OBJECTIVE(S)

Students learn how to research a medical condition and what type of health services are available to treat it, and then convey this information in a way that is meaningful to consumers.

## DESCRIPTION OF ACTIVITY

- Students develop a community resource pamphlet for a specific topic of health and wellness.
- They use resources such as the Internet, health and medical journals, phone books, and interviews to gather information about the condition/disease and the existing community services for it.
- The final pamphlet is designed for use by consumers; it includes information about the disease/condition (signs and symptoms, prevalence, etiology, treatment) and information about three or more agencies in the community that treat this condition (mission of agency, description of service provided, how agency is structured/funded, number of people served).

## MATERIALS/RESOURCES

- Internet access
- Computer
- Health services resource guides
- Telephone directories

## COMMENTS/MODIFICATIONS

- This activity can be completed as an individual project or as a small group project. Teachers may also require students to write a report describing the procedures used and the background information obtained to produce the pamphlet.

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | |
| 2. Health Care Systems | • |
| 3. Health Maintenance | • |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | |
| 6. Communications | • |
| 7. Interpersonal Dynamics | • |
| 8. Technical Skills | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | • |
| Social Studies | |
| The Arts | • |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Culture and History of Health Care

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2–3 days

## OBJECTIVE(S)

Students learn about the effects of culture and history on health care.

## DESCRIPTION OF ACTIVITY

- Provide each student with a one-and-a-half- to two-page description of a health practice from another culture. The teacher has prepared several different descriptions in advance of the activity.
- Have each student read and highlight main ideas from the description.
- Place students in small groups based on common cultures.
- Have each group prepare a five-minute oral presentation to include:
  - Name and location of culture
  - Two or more health problems these people encountered and their attempts to solve the problems
- After presentations, students meet in small groups to answer the following questions:
  - What are common health problems across cultures?
  - What are the similarities and differences between "traditional" and "modern" medical remedies?

## MATERIALS/RESOURCES

- Articles on health practices from different cultures

## COMMENTS/MODIFICATIONS

- Students may select a culture of interest or teacher can assign a specific reading to each student. Each student should have a role in the oral presentation.

## SOURCE/CREDIT

Submitted by Laura Skotnicki, Orleans-Niagara BOCES.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | • |
| 2. Health Care Systems | |
| 3. Health Maintenance | |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | |
| 6. Communications | |
| 7. Interpersonal Dynamics | |
| 8. Technical Skills | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | • |
| 3. Personal Qualities | • |
| 4. Interpersonal Skills | • |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | • |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Genetic Discoveries—A Historical Perspective

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 weeks

## OBJECTIVE(S)

Students learn about genetic discoveries from a historical perspective.

## DESCRIPTION OF ACTIVITY

- Each student researches one genetic discovery occurring between 1800 and the present.
- Each student writes a brief statement of the discovery, explaining what it is, when it happened, and why it is significant.
- As a group, students prepare a timeline of these discoveries on banner paper.
- Students superimpose other historic events on the timeline to show how history has affected science and how science and technology have affected history.
- The final banner can be displayed at school functions.

## MATERIALS/RESOURCES

- Banner paper
- Laminate

## COMMENTS/MODIFICATIONS

- Each student can be assigned a more comprehensive research paper to write on his or her particular genetic discovery.

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | • |
| 2. Health Care Systems | • |
| 3. Health Maintenance | |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | |
| 6. Communications | |
| 7. Interpersonal Dynamics | |
| 8. Technical Skills | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Mathematical Concepts—Bacteria

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 1–2 class periods

## OBJECTIVE(S)

Students apply mathematical concepts to the study of bacteria and discover why bacteria infections require prompt treatment.

## DESCRIPTION OF ACTIVITY

Students solve the following problem with a scientific calculator or computer: A single *E. coli* bacterium reproduces by binary fusion each 15 minutes according to the following equation: $N = a\,(2)t$ (where N = number of bacteria, $a$ = number of bacteria at start, $t$ = number of divisions by fusion).

- Calculate how long it takes for a single bacterium to become 12,800 bacteria.
- Calculate how many bacteria will be present at specific time periods (hourly for twelve hours).
- Create a data table with time in hours and number of bacteria.
- Graph data in a table (line graph).
- Use the graph to predict how many bacteria would be present at the end of 3.5 hours.
- Homework:
  - Write a 250–300-word essay explaining why bacterial infections require prompt treatment. Essay should include reference to data from lesson.

## MATERIALS/RESOURCES

- Scientific calculators or computer
- Petri dishes
- *E. coli* bacteria
- Graph paper

## COMMENTS/MODIFICATIONS

- Teacher should set the stage for this activity by showing students a petri dish with *E. coli* bacteria.

## SOURCE/CREDIT

Submitted by Robert Shimony, Tottenville High School.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | • |
| 2. Health Care Systems | • |
| 3. Health Maintenance | |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | • |
| 6. Communications | |
| 7. Interpersonal Dynamics | |
| 8. Technical Skills | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | • |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | |
| 6. Managing Information | |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | • |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Health Services**

**Title of Activity:** Role and Responsibilities of Health Care Workers

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 1–2 hours

## OBJECTIVE(S)

Students apply what they learn about the role and responsibilities of health care workers to a problem-solving situation.

## DESCRIPTION OF ACTIVITY

- Teacher presents a situation or a problem to students that health care workers are likely to face. Students work individually or in groups to analyze the situation and/or pose a solution to the problem. Questions they may answer include:
  - ❍ What are effective methods health care workers use to educate clients about the relationship between health and nutrition?
  - ❍ What are the steps a health care worker takes when he/she becomes aware of a data entry error on a patient's record(s)?

## MATERIALS/RESOURCES

- Blackboard or construction paper (for brainstorming and proposed solution)

## COMMENTS/MODIFICATIONS

- Students may respond to situations/problems orally or in writing.

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Health Services (3b)** | |
| 1. Academic Foundations | • |
| 2. Health Care Systems | |
| 3. Health Maintenance | |
| 4. Legal and Ethical Responsibilities | |
| 5. Safety | |
| 6. Communications | |
| 7. Interpersonal Dynamics | • |
| 8. Technical Skills | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | • |
| 3. Personal Qualities | • |
| 4. Interpersonal Skills | |
| 5. Technology | |
| 6. Managing Information | |
| 7. Managing Resources | |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# Cross Reference Checklist

## Health Services Sample Activities

| Sample Activities | CDOS 3b | CDOS 1 | CDOS 2 | CDOS 3a | ELA | LOTE | MST | H/PE /FCS | SS | ARTS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Financing Issues in Health Care Facilities | ✓ | | | ✓ | ✓ | | ✓ | | ✓ | |
| 2. Understanding Health Care Service Delivery | ✓ | | | ✓ | ✓ | | ✓ | | | |
| 3. Medical Conditions and the Health Services Available | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| 4. Culture and History of Health Care | ✓ | | | ✓ | ✓ | | | | ✓ | |
| 5. Genetic Discoveries—A Historical Perspective | ✓ | | | ✓ | ✓ | | ✓ | | | |
| 6. Mathematical Concepts—Bacteria | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 7. Role and Responsibilities of Health Care Workers | ✓ | | | ✓ | ✓ | | | | | |

Possible Connecting Standards

ELA = English Language Arts Standards
LOTE = Languages Other than English Standards
MST = Mathematics, Science, and Technology Standards
H/PE/FCS = Health, Physical Education, Family and Consumer Sciences Standards
SS = Social Studies Standards
Arts = The Arts Standards

# Career & Development Occupational Studies

## Core Curriculum

Standard 3b
Career Clusters—
Engineering/Technologies

# Core Curriculum—Engineering/ Technologies

This section provides teachers with an organizational tool that connects the Career Development and Occupational Studies (CDOS) Learning Standard 3b with corresponding performance indicators. The goal of this core curriculum is to provide a user-friendly guide that links CDOS with other content areas and provides educators with a framework for lesson plan development.

## Standard 3b: Career Clusters

Students who choose a career cluster will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

### 1. Foundation Development

**Performance Indicator: Students develop practical understanding of engineering technology through reading, writing, sample problem solving, and employment experiences.**

**Students will:**

A. Develop communication techniques:
   1. Develop and use reading skills
      a. Instruction manuals
      b. Specifications
      c. Plans/blueprints/schematics
      d. Product warnings
      e. Test and diagnostic instruments
      f. Graphs and charts
      g. Customer and supplier documentation (e.g., invoices, order forms, service agreements)
   2. Develop and use graphic and visual communication skills
      a. Technical and computer-aided drawing
      b. Sketches
      c. Geometric constructions
      d. Computer simulations
      e. Scale models
      f. Working prototypes
   3. Develop and use written and verbal communication skills
      a. Interviews
      b. Presentations
      c. Technical reports
      d. Repair orders

**Discussion Questions**

- What background skills (academic, social, personal) are necessary for successful entry into the engineering technologies?
- What are the ethical, legal, and safety practices that support the engineering technologies environment?

e. Job task sheets
f. E-mail
g. Customer and supplier documentation (e.g., work orders, invoices, service agreements)

4. Develop active listening skills
   a. Understand verbal directions and explanations
   b. Identify proper and improper sounds in equipment

B. Develop and apply mathematics competencies:
1. Computation skills for solution of technological problems
   a. Ratios/proportions
   b. Statistics
   c. Angles
   d. Estimations
2. Measurement skills using technical instruments
   a. Linear
   b. Volume
   c. Pressure
   d. Resistance
   e. Temperature
   f. Electric
   g. Metric and United States standards
3. Mathematical modeling to simulate technological systems

C. Develop and apply critical thinking and problem-solving skills:
1. Get information
2. Develop alternative solutions
3. Evaluate solutions using predetermined criteria

D. Develop and apply group skills:
1. Assume responsibility in a group formed to address a task
2. Participate in a team to generate solutions through consensus

E. Identify and apply ethical, legal, and workplace responsibilities:
1. Ethical implications of decisions and behaviors
2. Appropriate use/reuse of resources in products, systems design, servicing and repair, construction, and manufacturing
3. Relationship of technology to the natural environment
   a. Environmental maintenance and improvement
   b. Detrimental impacts
4. Relationship between technology and economic prosperity in the United States
   a. Product development
   b. Product manufacturing
   c. Service and repair
   d. Marketing and distribution
   e. Disposal and recycling

F. Identify and apply individual responsibilities:
1. Maintaining and improving personal and employment skills
   a. Being a team player
   b. Honesty
   c. Work ethics
   d. Punctuality
   e. Integrity
   f. Loyalty
   g. Flexibility

G. Identify and apply workplace safety procedures:
1. Work environment laws and regulations
   a. OSHA

b. HAZMAT
c. State (e.g., labor laws)
d. Local (e.g., permits, fire codes)

2. Safe work habits
   a. Alertness
   b. Wellness (e.g., nutrition, avoiding substance abuse)
   c. Planning and organization
   d. Proper equipment use
3. Group safety communication procedures
   a. Verbal commands and signals
   b. Hand signals
   c. Written procedures, signs, and postings
4. Safe work environments
   a. Facility features
   b. Equipment layout and accessories
   c. Space allocation
   d. Ventilation
   e. Noise abatement
   f. Eye protection
   g. Accident prevention
   h. Emergency procedures
5. Safety apparatus requirements and use
   a. Hoists and lifts
   b. Compressed air tools
   c. Jack stands
   d. Fuses and breakers
   e. Electrical grounding equipment
   f. Fire apparatus
6. Worker certification and licensing

## 2. Technology

**Performance Indicator: Students demonstrate how all types of engineering/technical organizations, equipment (hardware/software), and well-trained human resources assist and expedite the production/ distribution of goods and services.**

**Students will:**

A. Understand technical system structures:
   1. Structure and components: macro and micro systems
   2. Subsystems
   3. Open/closed loop system designs
   4. Measuring the performance of existing systems
      a. Sensory experience
      b. Instrumentation
      c. Feedback (e.g., customer satisfaction)
   5. System modeling (including computer simulation) to describe a technical/organizational system

B. Understand technical organization structures:
   1. Corporate
   2. Small business
   3. Production/manufacturing
   4. Service provider
   5. Research and development
   6. Governmental

### Discussion Questions

- What do students need to know about the structure and implementation of technology to contribute to the production/ distribution of goods and services?
- How does knowledge of the engineering technology industry lead to a successful career?

C. Understand tools and equipment:
   1. Evolutionary development of hand and machine tools
   2. Current state of technology
   3. Manufacturing
      a. Transportation
      b. Graphic communications
      c. Electronics
      d. Construction
      e. Mechanical
      f. Chemical
   4. Integration of equipment and computer applications
   5. Impact of technology on employee productivity
   6. Importance of continuous service and maintenance
   7. Importance of continuous upgrading

D. Identify and understand personal employment skills:
   1. Career development plan
   2. Core skills required for technology-related careers
   3. Technical careers and evolving requirements
      a. Identifying careers
      b. Career ladders
      c. Credentials needed
      d. Job locations
      e. Demand for workers
      f. Continuous training
   4. Job search skills
      a. Resume writing
      b. Interviewing
      c. Letters of recommendation
   5. Effects of a rapidly changing environment on technological careers
      a. Natural
      b. Economic
      c. Social
      d. Political
   6. Role/responsibilities of being employed versus being self-employed
   7. Understanding relationship of individual jobs and roles within an organization and industry

## 3. Engineering/Industrial Processes

**Performance Indicator: Students demonstrate knowledge of planning, product development and utilization, and evaluation that meet the needs of industry.**

**Students will:**

A. Understand product planning:
   1. Product and service development
      a. Market research
      b. Market creation based on consumer needs and wants
   2. Production
      a. Accessing technical data
      b. Production resources
         i. Human
         ii. Energy
         iii. Materials
         iv. Capital
   3. Service and repair procedures

**Discussion Questions**

- How do students apply their knowledge of the key components of the engineering technology process to meet industry needs?

4. Technical development and communication
    a. Sketching
    b. Orthographic projection
    c. Pictorial drawing
    d. CAD
    e. Solid modeling
    f. Manuals
    g. Advertisement
    h. Training sessions
5. Sequence of part(s) layout, production, and assembly based on technical drawing information
6. Alternative design and process options

B. Understand product development and use specified techniques for:
1. Engineering processes and production
    a. Chemical
    b. Material
    c. Electronic
    d. Mechanical
2. Application of technical principles
    a. Physics
    b. Chemistry
    c. Integrated mathematics
    d. Technology principles
    e. Properties of materials
3. Producing a product or service
    a. Tools
    b. Machines
    c. Materials
    d. Processes

C. Identify and understand product testing and evaluation techniques:
1. Testing to evaluate product quality and safety
    a. Destructive and nondestructive techniques
    b. Computer simulations
    c. Test instruments
    d. Tolerances
2. Statistical analysis to evaluate quality control process
3. Troubleshooting skills
    a. Identifying design errors
    b. Analyzing system malfunctions
    c. Identifying product faults
    d. Correcting problems
4. Consumer satisfaction
5. Performance standards

# Career Development & Occupational Studies

## Sample Activities

Standard 3b

Career Clusters—

Engineering/Technologies

# Career Clusters—Engineering/Technologies Sample Activities Overview

| Sample Activities | Page | CDOS and Possible Connecting Standards |
|---|---|---|
| Aircraft Inspection | 260 | CDOS; ELA; MST; SS |
| Automobile Design Factors | 261 | CDOS; ELA; MST; SS |
| Heavyweight Autos | 262 | CDOS; ELA; MST; SS |
| Workplace Cleanup | 263 | CDOS; ELA; MST; SS |
| Employment Search | 264 | CDOS; ELA; MST; SS |
| Patent Search | 265 | CDOS; ELA; MST; SS |
| Apollo I—Lessons from a Launch Pad | 266 | CDOS; MST |
| Teach a Computer Workshop | 267 | |

Possible Connecting Standards

ELA = English Language Arts Standards
LOTE = Languages Other than English Standards
MST = Mathematics, Science, and Technology Standards
H/PE/FCS = Health, Physical Education, Family and Consumer Sciences Standards
SS = Social Studies Standards
Arts = The Arts Standards

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Aircraft Inspection

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 3–5 class periods

## OBJECTIVE(S)

Students create an annual inspection checklist for a specific aircraft.

## DESCRIPTION OF ACTIVITY

- Students develop an annual aircraft inspection checklist that conforms to federal air regulations (FARs). The checklist will be used by the students, acting as aircraft inspectors and supervisors. This project requires students to access maintenance manuals, repair manuals, airworthiness directives, maintenance bulletins, service letters, federal air regulations, and safety items and procedures lists. Students must:
  - Read, evaluate, and record information from all available sources (e.g., CD-ROMs, microfilm, books, etc.).
  - Create a list of items to be inspected as per FARs, make a list of items to be repaired, and create a timeline to perform procedures.
  - Defend list of items to be repaired (findings).
  - List total cost for inspection, labor, and parts (for owner).
  - Create a summary of activities for written and oral presentation.

## MATERIALS/RESOURCES

- Federal air regulations
- CD-ROMs
- Books
- Microfilm

## COMMENTS/MODIFICATIONS

The focus of this activity can be modified for any engineering/technologies career cluster.

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | • |
| 3. Engineering | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Automobile Design Factors

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 5 class periods

## OBJECTIVE(S)

Students learn how to design and construct cars for varying performance objectives.

## DESCRIPTION OF ACTIVITY

- Students work in small groups to determine design features of automobiles (e.g., size, shape, weight) and estimate the effects of these features on speed and other performance measures. Students then build models based on their hypotheses, test their designs on an inclined track, and improve their models on the basis of their findings.
- The following steps must be accomplished to successfully complete this activity:
  - Brainstorm different car features.
  - Develop preliminary sketches, using traditional and CAD technology.
  - Develop a final sketch to size for each performance objective.
  - Construct the cars using materials supplied.
  - Race the car, to set best time and speed.
  - Report on results.
  - Develop plans/methods to improve the car's speed.
- Students should use appropriate software to graph and summarize results across models and trials.

## MATERIALS/RESOURCES

- Computer
- Software
- Car construction materials (assorted)

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | • |
| 3. Engineering | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | • |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Heavyweight Autos

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 class periods

## OBJECTIVE(S)

Students estimate the weight of an automobile by measuring the "footprint" of the tires and the air pressure in the tires.

## DESCRIPTION OF ACTIVITY

- Students use principles of engineering technology to calculate the weight of an automobile and use that information to estimate stopping distances under varying conditions. They attempt to answer the following question: "What effect does the size of the automobile and other internal and external factors have on traction and stopping distances?"
- To accomplish this task, students:
  - Paint the tire while the vehicle is up on jack stands.
  - Lower the car onto the floor.
  - Measure the psi in each tire and the area of the footprint.
  - Calculate weight of a single tire by multiplying psi x area, and then multiply by four to find approximate weight of all tires.
  - Calculate stopping distances based on various internal and external factors.
- Finally, students perform research on auto safety as related to tires to design features of tires that will improve traction and shorten stopping distances.

## MATERIALS/RESOURCES

- Automotive tires
- Air pressure gauges
- Paint

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | • |
| 3. Engineering | |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Workplace Cleanup

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 class periods

## OBJECTIVE(S)

Students apply engineering/technologies principles for developing a clean and safe work environment.

## DESCRIPTION OF ACTIVITY

Proper cleanup procedures are essential for a safe work environment. Students research performance standards and federal and state regulations that apply to cleanup procedures in an engineering/technologies cluster. Using this information, they perform the following activities:

- Brainstorm in class discussion to answer the questions:
  - Why is a clean work area important?
  - What are the features of a clean work area?
- Break into work groups to develop a plan to be submitted for class approval on applying cleanup principles to the classroom or work setting.
- Modify the plan on the basis of peer feedback.
- Perform trial cleanup in classroom or work setting.
- Evaluate performance, using industry-accepted performance standards.
- Prepare a summary report as if serving as a safety inspector.

## MATERIALS/RESOURCES

- Cleanup tools and materials

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | |
| 3. Engineering | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | • |
| 2. Thinking Skills | • |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Employment Search

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 class periods

## OBJECTIVE(S)

Students identify career opportunities in the engineering/technologies field.

## DESCRIPTION OF ACTIVITY

Students perform a simulated career employment investigation.
Steps students should take:

- Identify a cluster of jobs of interest.
- Locate a minimum of five employment opportunities in your career area, using at least four different job-search sources (e.g., Internet, websites, newspaper, trade journals, Department of Labor listings).
- Identify and compare the requirements for each of these positions (education, certification, etc.).
- Identify which of the positions best matches your interests and skills.
- Write an essay justifying your choice and the career path you would need to follow in order to qualify.
- Prepare a resume and cover letter for that position.

## MATERIALS/RESOURCES

- Job listing resources

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | |
| 3. Engineering | |
| **Career Development (1)** | |
| 1. Complete development of career plan | • |
| 2. Apply decision-making skills in selection of a career option | • |
| 3. Analyze skills and abilities in a career option | • |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | • |
| 3. Personal Qualities | • |
| 4. Interpersonal Skills | |
| 5. Technology | • |
| 6. Managing Information | |
| 7. Managing Resources | • |
| 8. Systems | |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Patent Search

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 1 week

## OBJECTIVE(S)

Students perform a patent search for a product of their choice and complete a patent application.

## DESCRIPTION OF ACTIVITY

- Students begin the activity by researching the history of patents and reasons for their development. They then identify the procedures required to obtain a patent. On the basis of this information, they perform the following tasks:
  - ❍ Identify a new product appropriate to the engineering/technologies career cluster.
  - ❍ Provide design specifications and uses of the product.
  - ❍ Determine if this project is suitable for patenting.
  - ❍ Obtain appropriate patent paperwork and prepare as if for submission.
  - ❍ Have classmates review the application to approve or return with recommendations for resubmission (based on actual patent approval criteria).
- Students conclude the activity with a written report on recommendations for improving the patent process.

## MATERIALS/RESOURCES

- United States patent application forms

## COMMENTS/MODIFICATIONS

## SOURCE/CREDIT

CDOS Writing Team.

## COMMENCEMENT STANDARDS

| | |
|---|---|
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| 1. Foundation Development | • |
| 2. Technology | • |
| 3. Engineering | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | • |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | |
| 8. Systems | • |

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| | |
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| The Arts | |

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Apollo I—Lessons from a Launch Pad

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 weeks

## OBJECTIVE(S)

Students recognize the importance of engineering in the development of design criteria. They also develop an understanding of how catastrophic failure can occur when critical design factors are overlooked or neglected.

## DESCRIPTION OF ACTIVITY

- Students are assigned to work in groups of four to research the history of Apollo I.
- By using various resources (e.g., Internet, library, media center), students gather and compile information on Apollo I. Students learn the technical aspects of:
  - Project schedules and budgets
  - Oxygen/nitrogen cabin pressurization
  - Reaction of various materials in extreme heat
  - Design complexity
  - Communications
  - Learning from failure
- Upon analyzing and comparing information, students complete a 500-word research paper (in proposal format) on the important role that engineering plays in the development of design criteria.
- Students also summarize their learning in a brief (two- to three-minute) oral presentation to the class.

## MATERIALS/RESOURCES

- Access to research documents

## COMMENTS/MODIFICATIONS

- Oral presentations may be individual.

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | |
| 3. Engineering | • |
| **Career Development (1)** | |
| 1. Complete development of career plan | |
| 2. Apply decision-making skills in selection of a career option | |
| 3. Analyze skills and abilities in a career option | • |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | • |
| 2. Use academic knowledge and skills | • |
| 3. Research, interpret, analyze, and evaluate information | • |
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| 2. Thinking Skills | • |
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| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

## SOURCE/CREDIT

Submitted by John D. Caminiti, Career and Technical Education, Broome-Delaware-Tioga BOCES, Binghamton, NY.

# COMMENCEMENT—CAREER CLUSTERS SAMPLE ACTIVITY

**Engineering/Technologies**

**Title of Activity:** Teach a Computer Workshop

| GRADE | | | |
|---|---|---|---|
| 9 | 10 | 11 | 12 |

**Estimated Time:** 2 class periods

## OBJECTIVE(S)

Students design and lead a half-hour software workshop for a group of 8-10 computer users in a computer lab setting.

## DESCRIPTION OF ACTIVITY

- Students plan a half-hour computer workshop to teach a group of 8-10 computer users about a software package or Internet-related activity. The workshop activities must be adapted to the audience's level of computer skills and requests for what they would like to learn. The audience may be a group of fellow students or adults. The students prepare and complete all activities including:
  - ❍ Identifying the workshop content
  - ❍ Preparing support materials
  - ❍ Setting up the lab for use
  - ❍ Delivering the workshop to other students

## MATERIALS/RESOURCES

- Software
- Miscellaneous workshop materials
- Workshop rating sheets

## COMMENTS/MODIFICATIONS

## COMMENCEMENT STANDARDS

| | |
|---|---|
| **Engineering/Technologies (3b)** | |
| 1. Foundation Development | • |
| 2. Technology | • |
| 3. Engineering | |
| **Career Development (1)** | |
| 1. Complete development of career plan | • |
| 2. Apply decision-making skills in selection of a career option | • |
| 3. Analyze skills and abilities in a career option | • |
| **Integrated Learning (2)** | |
| 1. Demonstrate integration and application | |
| 2. Use academic knowledge and skills | |
| 3. Research, interpret, analyze, and evaluate information | |
| **Universal Foundation Skills (3a)** | |
| 1. Basic Skills | |
| 2. Thinking Skills | • |
| 3. Personal Qualities | |
| 4. Interpersonal Skills | • |
| 5. Technology | • |
| 6. Managing Information | • |
| 7. Managing Resources | • |
| 8. Systems | • |

## POSSIBLE STANDARDS CONNECTIONS

| | |
|---|---|
| English Language Arts | • |
| Languages Other than English | |
| Mathematics, Science, and Technology | • |
| Health, Physical Education, and Family and Consumer Sciences | |
| Social Studies | |
| The Arts | |

## SOURCE/CREDIT

Submitted by Nicole Rice, Cincinnatus Central School, nrice@cincynet.cnyric.org

# Cross Reference Checklist

## Engineering/Technologies Sample Activities

| Sample Activities | CDOS 3b | CDOS 1 | CDOS 2 | CDOS 3a | ELA | LOTE | MST | H/PE /FCS | SS | ARTS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Aircraft Inspection | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 2. Automobile Design Factors | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 3. Heavyweight Autos | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 4. Workplace Cleanup | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 5. Employment Search | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 6. Patent Search | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 7. Apollo I—Lessons from a Launch Pad | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | |
| 8. Teach a Computer Workshop | ✓ | | | ✓ | ✓ | | ✓ | | | |

Possible Connecting Standards

ELA = English Language Arts Standards
LOTE = Languages Other than English Standards
MST = Mathematics, Science, and Technology Standards
H/PE/FCS = Health, Physical Education, Family and Consumer Sciences Standards
SS = Social Studies Standards
Arts = The Arts Standards