

2005 Mississippi Curriculum Framework

Postsecondary Health Care Assistant

(Program CIP: 51.1614 – Nurse/Nursing Assistant/Aide and Client Care Assistant)

Direct inquiries to

John Adcock
Director for Career and Technical Education
State Board for Community and Junior Colleges
3825 Ridgewood Road
Jackson, MS 39211
(601) 432-6518

Additional copies

Research and Curriculum Unit for Workforce Development
Vocational and Technical Education
Attention: Reference Room and Media Center Coordinator
P.O. Drawer DX
Mississippi State, MS 39762
www.rcu.msstate.edu/curriculum/downloads
(662) 325-2510

Published by

Office of Vocational and Technical Education
Mississippi Department of Education
Jackson, Mississippi 39205

Research and Curriculum Unit for Workforce Development
Vocational and Technical Education
Mississippi State University
Mississippi State, Mississippi 39762

The Mississippi Department of Education, Office of Vocational Education and Workforce Development does not discriminate on the basis of race, color, religion, national origin, sex, age, or disability in the provision of educational programs and services or employment opportunities and benefits. The following office has been designated to handle inquiries and complaints regarding the non-discrimination policies of the Mississippi Department of Education: Director, Office of Human Resources, Mississippi Department of Education, 359 North West Street, Suite 359, Jackson, Mississippi 39201, (601) 359-3511.

Acknowledgments

Writing Team: Addie Sims, Meridian Community College, Meridian
 Brenda Burch, Southwest Mississippi Community College,
 Summit
 Jayne River, Northwest Mississippi Community College,
 Oxford
 Jennifer Hull, East Mississippi Community College, Scooba
 Judy Williams, Mississippi Delta Community College,
 Greenwood
 Ella Cross, Mississippi Delta Community College,
 Greenville
 Pam Lowe, Jones County Junior College, Ellisville

RCU Staff: Stephanie King, Ph.D. – Research, Curriculum, and
 Assessment Specialist

**Professional Curriculum
 Advisory Team:** Cheryl Fowler, Mississippi Department of Health, Jackson
 East Mississippi Community College Health Care Assisting
 Advisory Committee
 Meridian Community College Health Care Assisting
 Advisory Committee

Standards in this document are based on information from the following organizations:

**Standards Based on the State of
 Mississippi Nurse Aide
 Candidate Handbook Exam
 Content Outline** Copyright © 2004 by Promissor, Inc. Reproduced from the
 candidate handbook and the Promissor Website with
 permission of Promissor, Inc. Permission does not
 constitute an endorsement by Promissor.

**Workplace Skills for the 21st
 Century** Secretary's Commission on Achieving Necessary Skills

**ISTE National Educational
 Technology Standards for
 Students** Reprinted with permission from *National Educational
 Technology Standards for Students: Connecting
 Curriculum and Technology*, copyright © 2000, ISTE
 (International Society for Technology in Education),
 1.800.336.5191 (U.S. & Canada) or 1.541.302.3777
 (International), iste@iste.org, www.iste.org. All rights
 reserved. Permission does not constitute an endorsement
 by ISTE.

Foreword

As the world economy continues to evolve, businesses and industries must adopt new practices and processes in order to survive. Quality and cost control, work teams and participatory management, and an infusion of technology are transforming the way people work and do business. Employees are now expected to read, write, and communicate effectively; think creatively, solve problems, and make decisions; and interact with each other and the technologies in the workplace. Vocational-technical programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name – A common name that will be used by all community/junior colleges in reporting students.
- Course Abbreviation – A common abbreviation that will be used by all community/junior colleges in reporting students.
- Classification – Courses may be classified as:
 - Vocational-technical core – A required vocational-technical course for all students.
 - Area of concentration (AOC) core – A course required in an area of concentration of a cluster of programs.
 - Vocational-technical elective – An elective vocational-technical course.
 - Related academic course – An academic course which provides academic skills and knowledge directly related to the program area.
 - Academic core – An academic course which is required as part of the requirements for an Associate degree.
- Description – A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course.
- Corequisites – A listing of courses that may be taken while enrolled in the course.
- Competencies and Suggested Objectives – A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. The remaining 25 percent of each course should be developed at the local district level and may reflect:
 - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
 - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
 - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
 - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-work transition activities, and articulation of secondary and postsecondary vocational-technical programs.
 - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.
- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:

| | |
|---------------------------|------------------------------------|
| ○ 3 semester credit hours | Math/Science Elective |
| ○ 3 semester credit hours | Written Communications Elective |
| ○ 3 semester credit hours | Oral Communications Elective |
| ○ 3 semester credit hours | Humanities/Fine Arts Elective |
| ○ 3 semester credit hours | Social/Behavioral Science Elective |

It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
 - Students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
 - Students who cannot demonstrate mastery of this content will be given the opportunity to do so.
- The roles of the Baseline Competencies are to:
 - Assist community/junior college personnel in developing articulation agreements with high schools, and
 - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts.
- The Baseline Competencies may be taught as special “Introduction” courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the “Introduction” courses or may offer the competencies through special projects or individualized instruction methods.
- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

Table of Contents

| | |
|---|----|
| Acknowledgments..... | 2 |
| Foreword..... | 3 |
| Program Description..... | 7 |
| Suggested Course Sequence..... | 8 |
| Health Care Assistant Courses..... | 9 |
| Basic Health Care Assisting..... | 9 |
| Special Care Procedures..... | 14 |
| Body Structure and Function..... | 18 |
| Home Health Aide and Homemaker Services..... | 22 |
| Recommended Tools and Equipment..... | 25 |
| Student Competency Profile..... | 28 |
| Appendix A: Standards Based on the State of Mississippi Nurse Aide Candidate Handbook | |
| Exam Content Outline..... | 29 |
| Appendix B: Related Academic Standards..... | 30 |
| Appendix C: Workplace Skills for the 21 st Century..... | 37 |
| Appendix D: National Educational Technology Standards for Students..... | 38 |

Program Description

The Health Care Assistant Program prepares the individual to assist in providing health care as a member of the health care team under the direction of a health care professional. This curriculum references standards based on the State of Mississippi Nurse Aide Candidate Handbook Exam Content Outline.

Graduates of the one semester program will be awarded the Certificate of Health Care Assistant. Students who complete the program may qualify for employment as Homemakers, Nurse Assistants, Long-Term Care Aides, or Home Health Aides in the Mississippi health care industry.

The program has been designed in modular format to allow sequential scheduling over a semester or it may be blocked into a short course format. Exit points are provided to allow employment as a Long-Term Care Aide after completion of the Nurse Assistant Core; and Homemaker/Home Health Aide after completion of the Nurse Assistant Core and Homemaker/Home Health Aide course of study.

Suggested Course Sequence Health Care Assistant

FIRST SEMESTER

- 5 sch Basic Health Care
Assisting (HCA 1115)
- 4 sch Body Structure and
Function (HCA 1214)
- 5 sch Special Care Procedures
(HCA 1125)
- 2 sch Home Health Aide and Homemaker
Services (HCA 1312)

16 sch total

Health Care Assistant Courses

Course Name: Basic Health Care Assisting

Course Abbreviation: HCA 1115

Classification: Vocational-Technical Core

Description: This course includes orientation to program policies, developing employability and job seeking skills, applying legal aspects of health care, applying safety considerations, communication and observation skills, medical terminology, and basic health care procedures. (5 sch: 2 hr. lecture, 4 hr. lab, 3 hr. clinical)

Prerequisite: None

| Competencies and Suggested Objectives |
|---|
| 1. Develop employability skills. <ol style="list-style-type: none"> a. Describe purposes of health care facilities. b. Discuss responsibilities of health care team members. c. Define role limitations of the health care assistant. d. Maintain personal hygiene. e. Utilize interpersonal communication skills. f. Utilize coping skills. |
| 2. Demonstrate job-seeking skills. <ol style="list-style-type: none"> a. Prepare a cover letter and resume. b. Complete a job application form. c. Demonstrate the role of an applicant in a job interview. d. Prepare a resignation letter. |
| 3. Explain professional ethics and legal responsibility. <ol style="list-style-type: none"> a. Explain professional ethics and legal responsibility. b. Discuss negligence, malpractice, abuse, sexual harassment, and neglect. c. Discuss the Code of Ethics. d. Discuss confidentiality, including HIPAA requirements. e. Identify protective services as related to clients. f. Identify client's rights in all health care settings. g. Discuss legal guidelines for use of client restraints. |
| 4. Use communication and observation skills in health care. <ol style="list-style-type: none"> a. Utilize effective communication skills. b. Identify communication techniques with special needs clients. c. Explain the importance of responding to client's request for assistance in a timely manner. d. Assist client with reality orientation support. e. Recognize, report, and record pertinent client observations. |

| |
|--|
| <p>5. Recognize and use medical terminology.</p> <ul style="list-style-type: none">a. Demonstrate the use of medical references to spell medical terms correctly.b. Identify common abbreviations and their meanings.c. Define prefixes, suffixes, and word roots of selected medical terms.d. Translate medical terms and abbreviations into common language. |
| <p>6. Recognize safety precautions and procedures.</p> <ul style="list-style-type: none">a. Identify personal safety precautions.b. Describe accident prevention guidelines.c. Identify, report, and eliminate hazards.d. Discuss and follow OSHA regulations.e. Identify and report product and equipment defects.f. Discuss oxygen safety.g. Discuss client safety in electrical and fire emergencies.h. Identify safety guidelines for client restraints. |
| <p>7. Perform infection control measures.</p> <ul style="list-style-type: none">a. Utilize principles of medical asepsis and infection control.b. Adhere to standard precautions.c. Relate standard precautions to the transmission of infectious diseases including HIV, AIDS, HAV, HBV, and TB.d. Demonstrate proper hand-washing technique.e. Demonstrate donning and removing disposable gloves.f. Discuss and perform procedures to clean equipment and washable supplies.g. Discuss isolation techniques.h. Dispose of contaminated material according to approved policy.i. Assist with education of the client and family in medical aseptic techniques. |
| <p>8. Maintain the client unit.</p> <ul style="list-style-type: none">a. Demonstrate bed-making skills to include unoccupied, occupied, and surgical.b. Demonstrate hospital bed positions.c. Discuss specialty beds and/or equipment.d. Maintain a clean and aesthetic environment.e. Maintain client supplies and equipment. |
| <p>9. Assist with lifting, moving, and transporting clients.</p> <ul style="list-style-type: none">a. Utilize principles of proper body mechanics.b. Transfer the client to and from a bed and chair.c. Position the client in a bed and chair.d. Turn and reposition the client in bed.e. Assist the client in ambulation.f. Assist with transfer of the client using special devices.g. Transport the client by stretcher, wheelchair, and bed.h. Assist with education of the client in proper use of assistive devices. |

10. Assist with personal care skills.
 - a. Provide client privacy.
 - b. Assist with dressing/undressing the client.
 - c. Assist with nail care.
 - d. Provide foot care.
 - e. Shampoo the client's hair.
 - f. Provide hair care.
 - g. Shave the client.
 - h. Bathe the client.
 - i. Perform oral hygiene.
 - j. Assist with care of hearing aids.
 - k. Discuss prosthetic care.
 - l. Provide perineal care.
 - m. Provide skin care.
 - n. Give back rub.
 - o. Record and report pertinent observations.

STANDARDS

Standards Based on the State of Mississippi Nurse Aide Candidate Handbook Exam Content Outline

- HCA1 The student will be competent in physical care skills in the activities of daily living to include hygiene, dressing and grooming, nutrition and hydration, elimination, and rest/sleep/comfort.
- HCA2 The student will be competent in physical care skills in basic nursing to include infection control, safety/emergency, therapeutic/technical procedures, and data collection and reporting.
- HCA3 The student will be competent in physical care skills in restorative areas to include prevention and self-care/independence.
- HCA4 The student will be competent in psychosocial care skills to include emotional and mental health needs.
- HCA5 The student will be competent in psychosocial care skills to include spiritual and cultural needs.
- HCA6 The student will be competent in the role of the nurse aide in the area of communication.
- HCA7 The student will be competent in the role of the nurse aide in the area of client rights.
- HCA8 The student will be competent in the role of the nurse aide in the area of legal and ethical behavior.
- HCA9 The student will be competent in the role of the nurse aide as a member of the health care team.

Related Academic Standards

- C1 Interpret written material.
- C3 Listen, comprehend, and take appropriate actions.
- C4 Access, organize, and evaluate information.
- C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.
- S1 Explain the Anatomy and Physiology of the human body.
- S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
- S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

Workplace Skills for the 21st Century

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Eastmond, J., Taylor, E. E., & Yeh, E. (1998). *Nursing assistant fundamentals*. New York: Glencoe McGraw Hill.
- Grubbs, P. A. (2003). *Essentials for today's nursing assistant*. Upper Saddle River, NJ: Prentice Hall.
- Hegner, B. R., Acello, B., & Caldwell, E. (2004). *Nursing assistant: A nursing process approach* (9th ed.). Albany, NY: Delmar.
- Huber, H., & Spatz, A. (1998). *Homemaker/home health aide* (5th ed.). Albany, NY: Delmar.
- Mosby's medical, nursing, & allied health dictionary* (6th ed.). (2002). St. Louis, MO: Mosby.
- Sorrentino, S. A. (2004). *Mosby's textbook for nursing assistants* (6th ed.). St. Louis, MO: Mosby.
- Venes, D., Thomas, C. L., & Taber, C. W. (Eds.). (2001). *Taber's cyclopedic medical dictionary* (19th ed.). Philadelphia: F. A. Davis.
- Wolgin, F. (2005). *Being a nursing assistant* (9th ed.). Upper Saddle River, NJ: Prentice Hall.
- Zucker, E. (2000). *Being a homemaker/home health aide* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Course Name: Special Care Procedures

Course Abbreviation: HCA 1125

Classification: Vocational-Technical Core

Description: This course includes specialized procedures for admitting, transferring, and discharging clients; assisting with diagnostic procedures; assisting with treatments; assisting with elimination needs of clients; assisting in meeting hydration and nutritional needs of the client; basic emergency procedures to include CPR/first aid; and basic knowledge and skills required to care for the long-term care resident. Safety is emphasized throughout each procedure. (5 sch: 2 hr. lecture, 2 hr. lab, 6 hr. clinical)

Pre/Corequisite: Basic Health Care Assisting (HCA 1115)

| Competencies and Suggested Objectives | |
|--|---|
| 1. | Admit, transfer, and discharge clients. <ol style="list-style-type: none"> a. Assist with admission procedures. b. Measure and record client's weight and height. c. Take and record vital signs. d. Collect specimens. e. Complete admission documentation. f. Assist with transferring the client. g. Assist with discharging the client. |
| 2. | Assist with diagnostic procedures for clients. <ol style="list-style-type: none"> a. Discuss the procedure for collecting stool specimens. b. Discuss the procedure for testing stool specimen for blood. c. Discuss procedures for collecting various types of urine specimens. d. Demonstrate common urine tests. e. Demonstrate the procedure for straining urine. f. Discuss procedures for collecting sputum specimens. |
| 3. | Assist with treatments for clients. <ol style="list-style-type: none"> a. Discuss procedures for preparing the client for an exam and assisting with the exam. b. Demonstrate application of comfort/protective devices. c. Discuss procedures for caring for the client receiving oxygen therapy. d. Demonstrate heat and cold applications. e. Assist with applying and caring for the client in passive body restraints. f. Apply elastic stockings. g. Assist the client in performing active/passive range-of-motion exercises. h. Assist the client with deep breathing and coughing exercises. i. Assist with caring for the client with drainage tubes. j. Demonstrate care for the client with hip surgery. k. Demonstrate the procedure for applying a dry, non-sterile dressing. l. Discuss assisting the client with a sitz bath. m. Assist with a whirlpool bath. n. Discuss care of the client in traction devices. |

| |
|---|
| <p>o. Discuss cast care for the client.</p> |
| <p>4. Assist the client in meeting hydration and nutritional needs.</p> <ul style="list-style-type: none">a. Assist, at the level of need, the client who can feed self.b. Feed the dependent client.c. Set up a meal tray for the client with visual difficulty.d. Assist the client in using specialized eating or drinking dinnerware.e. Measure and record intake and output.f. Calculate and record the percentage of dietary intake.g. Assist with hydration needs of the client.h. Report significant observations to the supervisor. |
| <p>5. Assist with elimination needs of clients.</p> <ul style="list-style-type: none">a. Demonstrate assisting the client with bedpan and urinal.b. Assist the client to bathroom/bedside commode.c. Care for the incontinent client.d. Discuss ostomy care.e. Care for indwelling urinary catheter and drainage system.f. Discuss changing a leg bag to a drainage bag.g. Demonstrate the procedure for applying an external catheter.h. Assist the client with bowel and bladder training. |
| <p>6. Perform basic emergency procedures.</p> <ul style="list-style-type: none">a. Obtain a professional health care provider CPR card.b. Identify emergency/potentially hazardous situations.c. Demonstrate the Heimlich maneuver.d. Discuss action to control bleeding.e. Discuss assistance to the burn victim.f. Discuss assistance to the client with stroke.g. Discuss assistance to the unconscious client.h. Discuss assistance to the client in shock.i. Discuss assistance to the convulsive client.j. Discuss assistance to the client in confused state or emotional crisis.k. Discuss assistance to the client who has fallen.l. Discuss emergency evacuation procedures. |
| <p>7. Discuss long-term care aide activities.</p> <ul style="list-style-type: none">a. Identify the federal requirements for nursing assistants working in a long-term care facility.b. Describe the role of the long-term care aide as a member of the health care team.c. Assist in resident assessment.d. Assist in planning resident care.e. Monitor environmental safety.f. Assist in providing restorative activities.g. Observe, document, and report pertinent observations to the nursing supervisor.h. Demonstrate techniques for addressing the unique needs and behaviors of individuals with dementias, including Alzheimer's.i. Discuss rights of the long-term care resident. |

STANDARDS*Standards Based on the State of Mississippi Nurse Aide Candidate Handbook Exam Content Outline*

- HCA1 The student will be competent in physical care skills in the activities of daily living to include hygiene, dressing and grooming, nutrition and hydration, elimination, and rest/sleep/comfort.
- HCA2 The student will be competent in physical care skills in basic nursing to include infection control, safety/emergency, therapeutic/technical procedures, and data collection and reporting.
- HCA3 The student will be competent in physical care skills in restorative areas to include prevention and self-care/independence.
- HCA4 The student will be competent in psychosocial care skills to include emotional and mental health needs.
- HCA5 The student will be competent in psychosocial care skills to include spiritual and cultural needs.
- HCA6 The student will be competent in the role of the nurse aide in the area of communication.
- HCA7 The student will be competent in the role of the nurse aide in the area of client rights.
- HCA8 The student will be competent in the role of the nurse aide in the area of legal and ethical behavior.
- HCA9 The student will be competent in the role of the nurse aide as a member of the health care team.

Related Academic Standards

- C1 Interpret written material.
- C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
- C4 Access, organize, and evaluate information.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.
- M1 Relate number relationships, number systems, and number theory.
- M4 Explore the concepts of measurement.
- S1 Explain the Anatomy and Physiology of the human body.
- S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

Workplace Skills for the 21st Century

- WP1 Allocates resources (time, money, materials and facilities, and human resources).

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Eastmond, J., Taylor, E. E., & Yeh, E. (1998). *Nursing assistant fundamentals*. New York: Glencoe McGraw Hill.
- Grubbs, P. A. (2003). *Essentials for today's nursing assistant*. Upper Saddle River, NJ: Prentice Hall.
- Hegner, B. R., Acello, B., & Caldwell, E. (2004). *Nursing assistant: A nursing process approach* (9th ed.). Albany, NY: Delmar.
- Huber, H., & Spatz, A. (1998). *Homemaker/home health aide* (5th ed.). Albany, NY: Delmar.
- Mosby's medical, nursing, & allied health dictionary* (6th ed.). (2002). St. Louis, MO: Mosby.
- Sorrentino, S. A. (2004). *Mosby's textbook for nursing assistants* (6th ed.). St. Louis, MO: Mosby.
- Venes, D., Thomas, C. L., & Taber, C. W. (Eds.). (2001). *Taber's cyclopedic medical dictionary* (19th ed.). Philadelphia: F. A. Davis.
- Wolgin, F. (2005). *Being a nursing assistant* (9th ed.). Upper Saddle River, NJ: Prentice Hall.
- Zucker, E. (2000). *Being a homemaker/home health aide* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Course Name: Body Structure and Function

Course Abbreviation: HCA 1214

Classification: Vocational-Technical Core

Description: This course includes study of the structure, function, common disorders, and normal aging-related changes of the integumentary, musculoskeletal, nervous, circulatory, respiratory, digestive, urinary, reproductive, endocrine, and sensory systems; stages of human growth and development; and nutritional needs through the life cycle. (4 sch: 3 hr. lecture, 2 hr. lab)

Prerequisite: Basic Health Care Assisting (HCA 1115)

| Competencies and Suggested Objectives |
|--|
| <p>1. Recognize the structure and function, common disorders, and normal aging-related changes of each organ system.</p> <ul style="list-style-type: none"> a. Describe the structure, function, common disorders, and normal aging-related changes of the integumentary system. b. Describe the structure, function, common disorders, and normal aging-related changes of the musculoskeletal system. c. Describe the structure, function, common disorders, and normal aging-related changes of the nervous system. d. Describe the structure, function, common disorders, and normal aging-related changes of the circulatory system. e. Describe the structure, function, common disorders, and normal aging-related changes of the respiratory system. f. Describe the structure, function, common disorders, and normal aging-related changes of the digestive system. g. Describe the structure, function, common disorders, and normal aging-related changes of the urinary system. h. Describe the structure, function, common disorders, and normal aging-related changes of the reproductive system. i. Describe the structure, function, common disorders, and normal aging-related changes of the endocrine system. j. Describe the structure, function, common disorders, and normal aging-related changes of the sensory system. |
| <p>2. Explain stages of normal growth and development throughout the lifespan.</p> <ul style="list-style-type: none"> a. Describe stages of human growth and development. b. Identify the client's basic physical and emotional needs using Maslow's Hierarchy. c. Utilize actions to meet the client's physical and emotional needs. d. Assist the client with age-related recreational activities and projects. e. Describe the stages of grief. f. Discuss care of the dying client and postmortem care. |

3. Explain nutrition and hydration needs of all clients.
 - a. Identify basic nutritional needs for all age groups.
 - b. Describe the types of therapeutic diets.
 - c. Serve, set up, and collect the food tray.
 - d. Distribute oral fluids as ordered.
 - e. Assist the client with dietary selections according to institutional policy.
 - f. Provide between meal nourishment as instructed.
 - g. Discuss documentation of nutrition and hydration.

STANDARDS

Standards Based on the State of Mississippi Nurse Aide Candidate Handbook Exam Content Outline

- HCA1 The student will be competent in physical care skills in the activities of daily living to include hygiene, dressing and grooming, nutrition and hydration, elimination, and rest/sleep/comfort.
- HCA2 The student will be competent in physical care skills in basic nursing to include infection control, safety/emergency, therapeutic/technical procedures, and data collection and reporting.
- HCA3 The student will be competent in physical care skills in restorative areas to include prevention and self-care/independence.
- HCA4 The student will be competent in psychosocial care skills to include emotional and mental health needs.
- HCA5 The student will be competent in psychosocial care skills to include spiritual and cultural needs.
- HCA6 The student will be competent in the role of the nurse aide in the area of communication.
- HCA7 The student will be competent in the role of the nurse aide in the area of client rights.
- HCA8 The student will be competent in the role of the nurse aide in the area of legal and ethical behavior.
- HCA9 The student will be competent in the role of the nurse aide as a member of the health care team.

Related Academic Standards

- C1 Interpret written material.
- C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
- C3 Listen, comprehend, and take appropriate actions.
- C4 Access, organize, and evaluate information.
- C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.
- M4 Explore the concepts of measurement.

- S1 Explain the Anatomy and Physiology of the human body.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

Workplace Skills for the 21st Century

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Eastmond, J., Taylor, E. E., & Yeh, E. (1998). *Nursing assistant fundamentals*. New York: Glencoe McGraw Hill.
- Grubbs, P. A. (2003). *Essentials for today's nursing assistant*. Upper Saddle River, NJ: Prentice Hall.
- Hegner, B. R., Acello, B., & Caldwell, E. (2004). *Nursing assistant: A nursing process approach* (9th ed.). Albany, NY: Delmar.
- Huber, H., & Spatz, A. (1998). *Homemaker/home health aide* (5th ed.). Albany, NY: Delmar.
- Mosby's medical, nursing, & allied health dictionary* (6th ed.). (2002). St. Louis, MO: Mosby.

Sorrentino, S. A. (2004). *Mosby's textbook for nursing assistants* (6th ed.). St. Louis, MO: Mosby.

Venes, D., Thomas, C. L., & Taber, C. W. (Eds.). (2001). *Taber's cyclopedic medical dictionary* (19th ed.). Philadelphia: F. A. Davis.

Wolgin, F. (2005). *Being a nursing assistant* (9th ed.). Upper Saddle River, NJ: Prentice Hall.

Zucker, E. (2000). *Being a homemaker/home health aide* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Course Name: Home Health Aide and Homemaker Services

Course Abbreviation: HCA 1312

Classification: Vocational-Technical Core

Description: This course includes basic knowledge and skills required to care for the home-bound client; and basic knowledge and skills required to provide homemaker services. (2 sch: 1 hr. lecture, 2 hr. lab)

Pre/Corequisite: All core courses

| Competencies and Suggested Objectives | |
|--|---|
| 1. | Discuss home health aide activities. <ul style="list-style-type: none"> a. Describe the role of the home health aide as a member of the health care team. b. Adhere to assigned plan of care. c. Monitor environmental safety. d. Discuss client home management. e. Discuss nutritional needs of the home-bound client. f. Observe, document, and report pertinent observations to supervisor. g. Describe the Mississippi Protective Laws. |
| 2. | Discuss homemaker services. <ul style="list-style-type: none"> a. Describe the role of the homemaker in providing care services. b. Describe household management. c. Monitor environmental safety. d. Discuss maintenance of a clean environment in the home. e. Perform laundry duties. f. Discuss marketing and meal preparation. g. Recognize emergency situations. |

STANDARDS

Standards Based on the State of Mississippi Nurse Aide Candidate Handbook Exam Content Outline

- HCA1 The student will be competent in physical care skills in the activities of daily living to include hygiene, dressing and grooming, nutrition and hydration, elimination, and rest/sleep/comfort.
- HCA2 The student will be competent in physical care skills in basic nursing to include infection control, safety/emergency, therapeutic/technical procedures, and data collection and reporting.
- HCA3 The student will be competent in physical care skills in restorative areas to include prevention and self-care/independence.
- HCA4 The student will be competent in psychosocial care skills to include emotional and mental health needs.

- HCA5 The student will be competent in psychosocial care skills to include spiritual and cultural needs.
- HCA6 The student will be competent in the role of the nurse aide in the area of communication.
- HCA7 The student will be competent in the role of the nurse aide in the area of client rights.
- HCA8 The student will be competent in the role of the nurse aide in the area of legal and ethical behavior.
- HCA9 The student will be competent in the role of the nurse aide as a member of the health care team.

Related Academic Standards

- C1 Interpret written material.
- C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
- C3 Listen, comprehend, and take appropriate actions.
- C4 Access, organize, and evaluate information.
- C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.
- M1 Relate number relationships, number systems, and number theory.
- M4 Explore the concepts of measurement.
- S1 Explain the Anatomy and Physiology of the human body.
- S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
- S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

Workplace Skills for the 21st Century

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Eastmond, J., Taylor, E. E., & Yeh, E. (1998). *Nursing assistant fundamentals*. New York: Glencoe McGraw Hill.
- Grubbs, P. A. (2003). *Essentials for today's nursing assistant*. Upper Saddle River, NJ: Prentice Hall.
- Hegner, B. R., Acello, B., & Caldwell, E. (2004). *Nursing assistant: A nursing process approach* (9th ed.). Albany, NY: Delmar.
- Huber, H., & Spatz, A. (1998). *Homemaker/home health aide* (5th ed.). Albany, NY: Delmar.
- Mosby's medical, nursing, & allied health dictionary* (6th ed.). (2002). St. Louis, MO: Mosby.
- Sorrentino, S. A. (2004). *Mosby's textbook for nursing assistants* (6th ed.). St. Louis, MO: Mosby.
- Venes, D., Thomas, C. L., & Taber, C. W. (Eds.). (2001). *Taber's cyclopedic medical dictionary* (19th ed.). Philadelphia: F. A. Davis.
- Wolgin, F. (2005). *Being a nursing assistant* (9th ed.). Upper Saddle River, NJ: Prentice Hall.
- Zucker, E. (2000). *Being a homemaker/home health aide* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Recommended Tools and Equipment

CAPITALIZED ITEMS

1. Bed with Electrical Controls and Side rails (1 per program)
2. Bed with Workable Side Rails (1 per 2 students)
3. CPR Head, Adult (1 set of 10 per program)
4. Lift, Hoyer, Hydraulic (1 per program)
5. Lifts, Uno and Sabina Slings, Small, Medium, Large, Extra Large (1 per program)
6. Manikin (adult), Client Care (2 per program)
7. Stretcher (1 per program)
8. Washer (1 per program)
9. Computer with CD ROM (1 per 4 students)
10. Printer, Laser (1 per 2 computers)
11. Dryer (1 per program)
12. TV, Color Monitor (30" minimum) (1 per program)
13. Torso (1 per program)
14. VCR (1 per program)
15. Skeleton, Total Body (1 per program)

NON-CAPITALIZED ITEMS

1. Antiembolism stockings (TED hose), Large and Extra Large (1 of each size)
2. Aids and Wedges, Position (Hand Roll, Roll Belt, Sheepskin, Heel Pads, WITHC Pads, Egg Crate Mattress) (1 per program)
3. Bag, Colostomy
4. Bag, Enema
5. Bag Cover, Catheter (1 per program)
6. Bag, Plastic
7. Bag, Vaginal Irrigation
8. Barrel, Dirty Linen (1 per program)
9. Basin, Bath (10 per program)
10. Basin, Emesis (10 per program)
11. Bath, Sitz (1 per program)
12. Bed Pan, Fracture (5 per program)
13. Bed Pan, Regular (5 per program)
14. Bedspreads (1 per bed)
15. Belt, Gait (2 per program)
16. Board, Marker (1 per program)
17. Cabinets (to store supplies) (2 per program)
18. Call Light Button Simulator (1 per bed unit)
19. Cane, Quad (1 per program)
20. Cart, Clean Linen (1 per program)
21. Cart, Utility (1 per program)
22. Chair, Commode (1 per program)
23. Chair, Geri (1 per program)

24. Chair, Shower (1 per program)
25. Clock, Wall with Second Hand (1 per program)
26. Clothes, Change of, for Maniken
27. Collection, Specimen
28. Containers, Urine and Feces
29. Covers, Probe, Digital
30. Covers, Glass Thermometer
31. Protectors, Clothes (Bib)
32. CPR Head, Baby (1 set of 5 per program)
33. Curtain, Privacy Ceiling or Wall-Mounted (1 per bed)
34. Dentures and Cup (1 set per program)
35. Diapers, Cloth, Adult Size Large (1 dozen per program)
36. Dispenser, Soap, Wall Mounted (1 per sink)
37. Fleets, Enema
38. Gloves, Latex
39. Gown, Hospital (20 per program)
40. Graduate, Urine
41. Kit, Isolation (1 per student)
42. Kit, Shroud
43. Lap, Buddy (1 per program)
44. Mask, Oxygen
45. Mattress, Hospital Bed (1 per bed)
46. Mercury Spill Kit
47. Pads, Cloth Incontinent (2 per bed)
48. Pillows (4 per bed)
49. Pillowcases (8 per bed)
50. Pitchers, Plastic (10 per program)
51. Dinnerware, to Include One Plate, Bowl, Saucer, Cup, Glass (1 place setting per bed)
52. Restraint, Mitt (1 per program)
53. Restraint, Vest (1 small, 1 medium, and 1 large per program)
54. Restraint, Waist (3 per program)
55. Restraint, Wrist (3 sets per program)
56. Scale, Physician (Measures Height and Weight) (1 per program)
57. Sheets, Fitted (2 per program)
58. Sheets, Hospital Bed, Flat Only (6 per bed)
59. Sphygmomanometer, Mercury (1 per program)
60. Sphygmomanometer, Portable, Aneroid (10 per program)
61. Sphygmomanometer, Wall Mount (1 per program)
62. Stand, Rolling for IV (1 per program)
63. Stethoscope, Teaching (1 per instructor)
64. Supplies, Personal Hygiene: Soap, Lotion, Emery Board, Orange Sticks, Nail Clippers, Toothpaste, Toothbrush, Dental Floss, Denture Brush, Denture Toothpaste, Lemon Glycerin Swabs, Barrier Cream, KY Jelly, Alcohol Swabs, Safety Razors, Comb, Brush
65. Table, Bedside (1 per bed)
66. Table, Overbed (1 per bed)

67. Thermometer, Bath (1 per program)
68. Thermometer, Digital (1 per program)
69. Thermometer, Glass Oral (12 per program)
70. Thermometer, Glass Rectal (12 per program)
71. Thermometer, Tympanic (1 per program)
72. Towels (6 dozen per program)
73. Trays, Food (1 per bed)
74. Tray, Shampoo (1 per program)
75. Tray with Drainage Bag, Catheter (1 per program)
76. Urinal (1 per program)
77. Utensils, Knife, Fork, and Spoon (1 set per bed)
78. Walker (1 per program)
79. Wash Cloths (6 dozen per program)
80. Walking Cane, Quad (1 per program)
81. Wheelchair (1 per program)
82. Workstation, Computer (1 per computer)
83. Table, AV Equipment (1 per program)

RECOMMENDED INSTRUCTIONAL AIDS

It is recommended that instructors have access to the following items:

1. Cabinet, File with Lock, 4 Drawer (2 per program)
2. Chart, Anatomy (1 per program)
3. Overhead Projector (1 per program)
4. LCD Projector (1 per program)
5. Laptop Computer (1 per program)
6. Copy Machine (1 per program)
7. Supplemental Videos (at instructor's request)

Student Competency Profile for Health Care Assistant

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Basic Health Care Assisting (HCA 1115)

- ____ 1. Develop employability skills.
- ____ 2. Demonstrate job-seeking skills.
- ____ 3. Explain professional ethics and legal responsibility.
- ____ 4. Use communication and observation skills in health care.
- ____ 5. Recognize and use medical terminology.
- ____ 6. Recognize safety precautions and procedures.
- ____ 7. Perform infection control measures.
- ____ 8. Maintain the client unit.
- ____ 9. Assist with lifting, moving, and transporting clients.
- ____ 10. Assist with personal care skills.

Special Care Procedures (HCA 1125)

- ____ 1. Admit, transfer, and discharge clients.
- ____ 2. Assist with diagnostic procedures for clients.
- ____ 3. Assist with treatments for clients.
- ____ 4. Assist the client in meeting hydration and nutritional needs.
- ____ 5. Assist with elimination needs of clients.
- ____ 6. Perform basic emergency procedures.
- ____ 7. Discuss long-term care aide activities.

Body Structure and Function (HCA 1214)

- ____ 1. Recognize the structure and function, common disorders, and normal aging-related changes of each organ system.
- ____ 2. Explain stages of normal growth and development throughout the lifespan.
- ____ 3. Explain nutrition and hydration needs of all clients.

Home Health Aide and Homemaker Services (HCA 1312)

- ____ 1. Discuss home health aide activities.
- ____ 2. Discuss homemaker services.

Appendix A: Standards Based on the State of Mississippi Nurse Aide Candidate Handbook Exam Content Outline¹

- HCA1 The student will be competent in physical care skills in the activities of daily living to include hygiene, dressing and grooming, nutrition and hydration, elimination, and rest/sleep/comfort.
- HCA2 The student will be competent in physical care skills in basic nursing to include infection control, safety/emergency, therapeutic/technical procedures, and data collection and reporting.
- HCA3 The student will be competent in physical care skills in restorative areas to include prevention and self-care/independence.
- HCA4 The student will be competent in psychosocial care skills to include emotional and mental health needs.
- HCA5 The student will be competent in psychosocial care skills to include spiritual and cultural needs.
- HCA6 The student will be competent in the role of the nurse aide in the area of communication.
- HCA7 The student will be competent in the role of the nurse aide in the area of client rights.
- HCA8 The student will be competent in the role of the nurse aide in the area of legal and ethical behavior.
- HCA9 The student will be competent in the role of the nurse aide as a member of the health care team.

¹ *State of Mississippi: Nurse aide candidate handbook.* (2004). Retrieved September 29, 2004, from <http://www.asisvcs.com/publications/pdf/072500.pdf>

Appendix B: Related Academic Standards

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

- C1 Interpret written material.
- C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
- C3 Listen, comprehend, and take appropriate actions.
- C4 Access, organize, and evaluate information.
- C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

- C1.01 Read and follow complex written directions.
- C1.02 Recognize common words and meanings associated with a variety of occupations.
- C1.03 Adjust reading strategy to purpose and type of reading.
- C1.04 Use sections of books and reference sources to obtain information.
- C1.05 Compare information from multiple sources and check validity.
- C1.06 Interpret items and abbreviations used in multiple forms.
- C1.07 Interpret short notes, memos, and letters.
- C1.08 Comprehend technical words and concepts.
- C1.09 Use various reading techniques depending on purpose for reading.
- C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

- C2.01 Use visuals in written and in oral presentations.
- C2.02 Recognize visual cues to meaning (layout, typography, etc.).
- C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

- C3.01 Identify and evaluate orally-presented messages according to purpose.
- C3.02 Recognize barriers to effective listening.
- C3.03 Recognize how voice inflection changes meaning.
- C3.04 Identify speaker signals requiring a response and respond accordingly.
- C3.05 Listen attentively and take accurate notes.
- C3.06 Use telephone to receive information.
- C3.07 Analyze and distinguish information from formal and informal oral presentations.

- TOPIC C4: Access, organize, and evaluate information.
- C4.01 Distinguish fact from opinion.
 - C4.02 Use various print and non-print sources for specialized information.
 - C4.03 Interpret and distinguish between literal and figurative meaning.
 - C4.04 Interpret written or oral communication in relation to context and writer's point of view.
 - C4.05 Use relevant sources to gather information for written or oral communication.
- TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
- C5.01 Select appropriate words for communication needs.
 - C5.02 Use reading, writing, listening, and speaking skills to solve problems.
 - C5.03 Compose inquiries and requests.
 - C5.04 Write persuasive letters and memos.
 - C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
 - C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
 - C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
 - C5.08 Select and use appropriate formats for presenting reports.
 - C5.09 Convey information to audiences in writing.
 - C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.
- TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.
- C6.01 Give complex oral instructions.
 - C6.02 Describe a business or industrial process/mechanism.
 - C6.03 Participate effectively in group discussions and decision making.
 - C6.04 Produce effective oral messages utilizing different media.
 - C6.05 Explore ideas orally with partners.
 - C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
 - C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
 - C6.08 Gather and provide information utilizing different media.
 - C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

- M1 Relate number relationships, number systems, and number theory.
- M2 Explore patterns and functions.
- M3 Explore algebraic concepts and processes.

- M4 Explore the concepts of measurement.
- M5 Explore the geometry of one-, two-, and three-dimensions.
- M6 Explore concepts of statistics and probability in real world situations.
- M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

- M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
- M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
- M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
- M1.04 Investigate relationships among fractions, decimals, and percents.
- M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
- M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
- M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
- M1.08 Use computation, estimation, and proportions to solve problems.
- M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

- M2.01 Describe, extend, analyze, and create a wide variety of patterns.
- M2.02 Describe and represent relationships with tables, graphs, and rules.
- M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
- M2.04 Use patterns and functions to represent and solve problems.
- M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.
- M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
- M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

- M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
- M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.

- M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.
- TOPIC M4: Explore the concepts of measurement.
- M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.
- TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.
- M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.
- TOPIC M6: Explore the concepts of statistics and probability in real world situations.
- M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.
M6.05 Develop an appreciation for the pervasive use of probability in the real world.
- TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.
- M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

- S1 Explain the Anatomy and Physiology of the human body.
- S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
- S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
- S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
- S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
- S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
- S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

- TOPIC S1: Explain the Anatomy and Physiology of the human body.
- S1.01 Recognize common terminology and meanings.
- S1.02 Explore the relationship of the cell to more complex systems within the body.
- S1.03 Summarize the functional anatomy of all the major body systems.
- S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
- S1.05 Compare and contrast disease transmission and treatment within each organ system.
- S1.06 Explore the usage of medical technology as related to human organs and organ systems.
- S1.07 Explain the chemical composition of body tissue.
- TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
- S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
- S2.02 Explain sexual and asexual reproduction.
- S2.03 Describe the ecological importance of plants as related to the environment.
- S2.04 Analyze the physical chemical and behavioral process of a plant.

- TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
- S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.
- TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
- S4.01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.
- TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
- S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.
S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.
- TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
- S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.
- TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

- S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
- S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
- S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.
- TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.
- S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
- S8.02 Observe and practice safe procedures in the classroom and laboratory.
- S8.03 Demonstrate proper use and care for scientific equipment.
- S8.04 Investigate science careers, and advances in technology.
- S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

Appendix C: Workplace Skills for the 21st Century²

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.
- WP5 Selects, applies, and maintains/troubleshoots technology.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

² Secretary's commission on achieving necessary skills. (1991). Retrieved July 13, 2004, from <http://wdr.doleta.gov/SCANS/>

Appendix D: National Educational Technology Standards for Students³

- T1 Basic operations and concepts
- Students demonstrate a sound understanding of the nature and operation of technology systems.
 - Students are proficient in the use of technology.
- T2 Social, ethical, and human issues
- Students understand the ethical, cultural, and societal issues related to technology.
 - Students practice responsible use of technology systems, information, and software.
 - Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
- T3 Technology productivity tools
- Students use technology tools to enhance learning, increase productivity, and promote creativity.
 - Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
- T4 Technology communications tools
- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
 - Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- T5 Technology research tools
- Students use technology to locate, evaluate, and collect information from a variety of sources.
 - Students use technology tools to process data and report results.
 - Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
- T6 Technology problem-solving and decision-making tools
- Students use technology resources for solving problems and making informed decisions.
 - Students employ technology in the development of strategies for solving problems in the real world.

³ ISTE: *National educational technology standards (NETS)*. (2000). Retrieved July 13, 2004, from <http://cnets.iste.org/>