



HEALTH SCIENCE 2 - 5551
Advanced Healthcare Applications

Course Description: Health Science 2, Advanced Healthcare Applications, course is designed to provide for the development of advanced knowledge and skills related to a wide variety of health careers. Students will employ hands-on experiences for continued knowledge and skill development.

Course objectives: Upon completion of this course, proficient students will be able to build on foundational standards from Health Science 1 and incorporate patient care skills learned within a classroom and lab setting. Students will also become CPR certified.

General Requirements: **This course is for students in grades 10-12.** Students enrolled in this course must have successfully completed Health Science 1 with a grade of 75% or higher. Furthermore, students are required to job shadow in an area that will connect to a real-world experience in the healthcare industry.

Pre-requisites: Biology and Health Science 1 – Foundations of Healthcare Professions

Credit: CP - 1 unit = (120 hours) or 2 units = (240 hours)

Recommended Maximum Class Size – 24 students

NOTE: *Please refer to the completer requirements found on the SC Health Science website. [Health Science Completer Requirements](#)*

STANDARDS:

Foundation Standard 1: Academic Foundation

Understand human anatomy, physiology, common diseases and disorders, and medical math principles.

1. **Demonstrate** the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.
2. **Demonstrate** competency in basic math skills and conversions as they relate to healthcare.
 - a. The Metric System, i.e. centi-, milli-, **deci-**, **micro-**, and kilo-
 - b. Mathematical (average, ratios, fractions, percentages, addition, subtraction, multiplication, division).
 - c. Conversions (height, weight/mass, length, volume, temperature, household measurements)
 - d. Perform mathematical applications to determine vital sign applications and basic pharmacology equations.
3. **Identify** basic levels of organization of the human body.
 - a. **Identify** the major human body systems, **their basic function and associated diseases.**
 - b. **Identify directions and planes of the body.**
4. Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease.
 - Gene testing
 - Gene therapy
 - Cloning
 - Stem cell research

Foundation Standard 2: Communications

Demonstrate methods of delivering and obtaining information, while communicating effectively.

Distinguish subjective and objective information.

1. **Recognize and interpret** elements of written and electronic communication (spelling, grammar, formatting, and confidentiality).
2. **Prepare** examples of technical, informative and creative writing.
3. **Document, report, and communicate** in a straightforward, understandable, accurate, and timely manner (such as: how to correct errors, read labels, report information and data, and provide hand-off reports).
4. **Apply and practice** active speaking and listening skills.
 5. **Identify and Adapt** communication styles to accommodate common barriers to communication in healthcare.
 - a. Physical disabilities
 - Aphasia
 - Hearing loss
 - Impaired vision
 - Developmental level
 - b. Psychological barriers
 - Attitudes
 - Bias
 - Prejudice
 - Stereotyping

6. **Modify** communication to meet the needs of the patient/client and be appropriate to the situation.
 7. Describe appropriate interactions with patients throughout various stages of psychosocial development.
 8. Interpret common medical abbreviations to communicate information.
 9. Demonstrate appropriate use of digital communication in a work environment, such as email, text, and social media.

Foundation Standard 3: Systems

Identify how key systems affect services performed and quality of care.

1. **Explain** factors influencing healthcare delivery systems. (Example: Affordable Care Act, aging populations etc.)
2. **Discuss** common methods of payment for healthcare .
 - a. Private health insurance plans
 - b. Managed Care
 - Health Maintenance Organization (HMO)
 - Independent Practice Association (IPA)
 - Preferred Provider Organization (PPO)
 - c. Government programs
 - d. Affordable Care Act (ACA)
 - Medicaid
 - Medicare
 - Tricare
 - Workers' Compensation
3. Analyze healthcare economics and related terms.
 - a. The history and role of health insurance and employer/employee benefits;
 - b. Fundamental terms related to health insurance
 - a. Claim
 - b. Coinsurance
 - c. Co-payment
 - d. Fraud
 - e. HIPAA
 - f. Premium
 - g. Deductible
3. **Examine** the healthcare consumer's rights and responsibilities within the healthcare system.
 - a. Self-advocacy
 - b. Compliance
 - c. Patient's Bill of Rights
4. **Assess and explain** the impact of emerging issues such as technology, epidemiology, genetics, bioethics, and socioeconomics on healthcare delivery

systems.

Foundation Standard 4: Employability Skills

Use employability skills to enhance employment opportunities and job satisfaction.

- a. **Participate** in job-based scenarios (role play, case studies, job shadowing) that allow for application of personal traits, attitudes, and employability skills desirable in a member of the healthcare team. (such as: dealing with the tardy employee, satisfying the unhappy patient, conflict resolution with a fellow team member)
- b. **Demonstrate** process and strategies for obtaining and retaining employment, (proper use of social media, personal networking, soft skills, job sites, internships).
- c. **Develop and expand** components of a personal portfolio (letter of introduction, resume, healthcare project, writing sample, work-based learning, oral presentation, service learning, credentials, technology, and leadership experience).
- d. **Showcase** personal traits, attitudes, and employability skills desirable in a member of the healthcare team through participation in healthcare work-based learning experiences (guest speakers, virtual tours, job shadowing, virtual job shadowing, blood drives, community service projects, HOSA, etc.).
 - Chain of command
 - Communication Skills
 - Decision making
 - Flexible
 - Organization
 - Problem Solving
 - Scope of practice
 - Time Management
 - Work Ethic
- e. **Expand** upon components of a personal portfolio (letter of introduction, resume, healthcare project, writing sample, work-based learning, oral presentation, service learning, credentials, technology, and leadership experience).
- f. **Demonstrate** professional and leadership skills by participating in experiences through a career and technology student organization (CTSO) like SC HOSA Future Health Professionals (whether as a member or as a participant in a HOSA sponsored event).

Foundation Standard 5: Legal Responsibilities

Describe legal responsibilities, limitations, and implications on healthcare worker actions.

1. **Explain** practices that could result in malpractice, liability, and/or negligence (to include civil law, and criminal law.—Summarize laws governing harassment, labor, and scope of practice.
 - Abuse
 - Assault
 - Battery

- Contract
 - Invasion of privacy
 - Libel
 - Malpractice
 - Negligence
 - Slander
 - Tort
2. **Apply** procedures for accurate documentation and record keeping (for example, legally correcting errors on medical records, etc.)
 3. **Describe and apply** standards for safety, privacy, and confidentiality of the Health Insurance Portability and Accountability Act (HIPAA privileged communication).
 4. **Describe advance directives**, informed consent and explore the Patient's and Residents Bill of Rights.
 5. **Summarize** the essential characteristics of a patient's basic rights within a healthcare setting.
 6. **Differentiate** informed and implied consent.
 7. **Explain** laws governing harassment.
 8. **Describe** the concept of scope of practice.
 9. **Utilize** procedures for reporting activities and behaviors that affect the health, safety, and welfare of others (incident report).

Foundation Standard 6: Ethics

Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment.

1. **Differentiate** between ethical and legal issues impacting healthcare.
 - a. **Recognize and identify** ethical and legal issues and their implications related to healthcare (such as organ donation, in vitro fertilization, euthanasia, scope of practice, ethics committee, etc.)
2. **Discuss** bioethical issues related to healthcare.
3. **Apply** ethical behaviors in healthcare including personal, professional, and organizational ethics.
4. **Discuss and utilize** procedures for reporting activities and behaviors that affect health, safety, and welfare of others (such as an incident report)
5. **Identify** stages of death and dying.

Foundation Standard 7: Safety Practices

Identify existing and potential hazards to clients, co-workers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness.

- A. Explain principles of infection transmission.
 - a. **Describe** mode of transmission
 - a. Common vehicle (air, food, water)
 - b. Direct
 - c. Healthcare-associated infections (nosocomial)
 - d. Indirect
 - e. Opportunistic
 - f. Vectors
 - B. **Differentiate** methods of controlling the spread and growth of microorganisms. (aseptic vs. sterile technique, antisepsis, disinfection, sterilization, standard vs. transmission-based precautions, and blood-borne pathogens)
 - a. Asepsis
 - i. Sanitization
 - ii. Antisepsis
 - iii. Disinfection
 - iv. Sterile technique
 - v. Sterilization
 - b. Standard precautions
 - i. Handwashing
 - ii. Gloving
 - iii. Personal Protective Equipment (PPE)
 - iv. Environmental cleaning
 - c. Isolation precautions
 - i. Transmission-based contact
 - d. Bloodborne pathogen precautions
 - e. Vaccinations
2. **Personal Safety**
- a. **Apply** personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations.
 - b. **Demonstrate** principles of body mechanics and patient safety during transfers, ambulation, and positioning.
 - i. Ambulating
 - ii. Lifting
 - iii. Positioning
 - c. Demonstrate and apply the use of personal protective equipment (PPE).

Foundation Standard 8: Teamwork

Identify roles and responsibilities of individual members as part of the healthcare team.

1. **Act** responsibly as a team member, including gaining practice employing leadership skills when acting as team leader.
2. **Collaborate** with others to formulate team objectives and accomplish team goals utilizing the characteristics of effective teamwork.

3. **Apply** effective techniques for managing team conflict.
4. **Apply** principles of teamwork.
5. **Evaluate** why teamwork is an important part of healthcare and how it improves patient care.

Foundation Standard 9: Health Maintenance Practices

Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.

1. Healthcare Across the Lifespan

- a. **Discuss** physical, mental, social and behavioral development and its impact on healthcare.

***Foundation Standard 10: Technical Skills**

Apply and demonstrate technical skills and knowledge common to health career specialties.

1. **Demonstrate** procedures for measuring and recording vital signs including recognition of normal ranges, data interpretation, reporting of abnormal values, and documentation of values received.
 - Blood pressure
 - Temperature
 - Oxygen saturation
 - Pain
 - Pulse
 - Respirations
2. **Apply** skills to obtain Heartsaver or BLS training or certification in adult, child, and infant cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED).
3. **Demonstrate** special health care skills as needed in the medical field for several different career paths, such as, but not limited to, Laboratory, Dental, Medical Assisting, Nurse Assisting, Physical Therapy, Patient Care Technician, Allied Health occupations or Office Management/Business and Accounting. The specific skills and care paths chosen may differ as to the teacher's professional certification area. (See additional skill *example addendum*).

Foundation Standard 11: Information Technology in Healthcare

Apply information technology practices common across health professions.

1. **Identify** records and files common to the healthcare setting including electronic health record - EHR).
 - Diagnostic tests
 - History and physical
 - Medications
 - Patient demographics
 - Progress notes
 - Treatment Plan
3. **Identify** and **differentiate** types and content of health records (including EHR) , i.e. patient,

pharmacy, laboratory, radiology, etc.

4. **Recognize** technology applications in healthcare including file storage.
2. **Create** documentation in the health record (EHR/MHR) that reflects timeliness, completeness, and accuracy while adhering to information systems policies and procedures at the local, state, and national and organizational level
 - a. **Use** health record data collection tools (such as input screens, document templates)
 - b. **Understand** the principle and **demonstrate** the appropriate methods to correct inaccurate information/errors personally entered into EHR/MHR, such as adding, clarifying, and correcting information.
3. **Explore** different types of health record data collection tools such as patient
 - a. Medical wearable devices
 - b. Patient monitoring equipment
 - c. Phone application
 - d. Telemedicine/telehealth
4. **Identify** common policies and procedures for proper access, disclosure and protection of personal information such as: passwords, administrative safeguards, database security.
 - a. **Apply** fundamentals of privacy and confidentiality policies and procedures (HIPAA).
 - b. **Adhere** to information systems policies, procedures, and regulations as required by national, state, and local entities. (Such as: Health Information Technology Act [HITECH Act], American Recovery and Reinvestment Act [ARRA]).
 - c. **Describe** the consequences of inappropriate use of health data in terms of disciplinary action.

*Additional Skill Example Addendum:

***Foundation Standard 12 – South Carolina**

Basic general skills that include vital signs, CPR, and FA will be taught, practiced and demonstrated along with basic skills that may come from specific areas in health care. Examples: Dental: demonstrating brushing and flossing; Laboratory: operating a microscope, or testing urine; Medical Assisting: Suture removal, or sterile procedure/gloving; Nurse Assisting: feeding a patient, positioning a patient, I's and O's; Physical Therapy; ambulating with crutches, walkers or canes; Healthcare Office Management: Filing, Using the telephone. There are many other basic skills that instructors may draw from within the healthcare field. Which technical skills will be added to HS2 will be at the discretion of the instructor and taking into account time management for the course. The main thing is to reinforce a skill associated with a career or careers.

RESOURCES:

Browse catalog at www.mysctextbooks.com for latest instructional materials available to South Carolina public schools for health science technology courses.

Simmers, Louise. Diversified Health Occupations. Albany, New York: Delmar, latest edition.

--. -----: Teacher's Resource Kit, latest edition.

-----, -----: Workbook, latest edition.

HealthCenter21

<https://learn.aeseducation.com>

OTHER RESOURCES:

Colbert, Bruce J. Workplace Readiness for Health Occupations: A Foundation for Excellence. Delmar, latest edition.

Benjamin-Chung, Michele. Math Principles and Practice, Preparing for Health Career Success. Upper Saddle River: NJ: Prentice Hall, latest edition.

Haroun, Lee and Royce, Susan. Delmar's Teaching Ideas and Classroom Activities or Health Care. Albany, NY: Delmar, latest edition.

Toner, Patricia Rizzo, Consumer Health and Safety Activities, The Center for Applied Research in Education, latest edition.

Toner, Patricia Rizzo, Relationships and Communication Activities, The Center for Applied Research in Education, latest edition.

Toner, Patricia Rizzo, Stress Management and Self- Esteem Activities, The Center for Applied Research in Education, latest edition.

Umstatter, Jack. Brain Games: Ready-to-Use Activities That Make Thinking Fun for Grades 6-12. San Francisco: Jossey-Bass, latest edition.

Zedlitz, Robert H. How to Get a Job in Health Care. Albany, NY: Delmar, latest edition.

WEB SITES:

South Carolina Department of Education
www.ed.sc.gov

South Carolina Health Science Education Teacher Resource Guide
www.cateresources.net/HSTETeacherResourceGuide/index.html

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Health Science Educator Resources
www.HealthScienceTeacher.com

National HOSA www.hosa.org

SC HOSA
www.schosa.org

National Consortium for Health Science Education
www.healthscienceconsortium.org

South Carolina Occupational Information System (SCOIS) www.scois.net

(link no longer works) Personal Pathways to Success™
<http://www.palmettopathways.org/EEDA2/default.aspx>

EDUCATIONAL/CLASSROOM RESOURCES

American Medical Association: Careers in Healthcare
<http://www.ama-assn.org/ama/pub/education-careers/careers-health-care.shtml>

CareerOneStop formerly known as America's Career InfoNet
<https://www.careeronestop.org/Toolkit/ACINet.aspx>

American Heart Association <http://www.americanheart.org/presenter.jhtml?identifier=1200000>
American Journal of Nursing
<https://www.jstor.org/journal/americanj nursing>

American Red Cross
<http://www.redcross.org/>

Annals of Internal Medicine <http://www.annals.org/>

Anatomy in Clay
<http://www.anatomyinclay.com/>

Ask Dr. Math
<http://mathforum.org/dr.math/dr-math.html>

Assessment: Motivational Appraisal of Personal Potential
<https://www.assessment.com/>

Aetna: InteliHealth
<http://custom.aetna.com/Inova/intelihealth.shtml>

Become an RN

<https://www.learnhowtobecome.org/nurse/registered-nurse/>

Be Something Amazing – Video of Virtual Surgeries and Occupations in Healthcare
<https://besomethingamazing.com/>

Body Works: A toolkit for healthy teens and strong families
<http://www.womenshealth.gov/bodyworks/>

Cancer.Net
<http://www.cancer.net/portal/site/patient>

Cardinal Health: Making healthcare safer and more productive
<http://www.cardinal.com/>

Career Voyages
<https://webarchive.library.unt.edu/eot2008/20080916003633/http://careervoyages.gov/>

CNN Health
<http://www.cnn.com/HEALTH/>

CollegeNet <http://www.collegenet.com/elect/app/app>

CreativEd Services
<http://www.creativedservices.com/>

Dr. Greene.....Caring for the Next Generation
<http://www.drgreene.com/>

Estronaut: A Forum for Women's Health
<http://www.womenshealth.org/>

Explore Health Careers
<http://explorehealthcareers.org/en/home>

Health Central
<http://www.healthcentral.com/>

JAMA: The Journal of the American Medical Association
<http://jama.ama-assn.org/>

Learn and Serve America's Service Learning Clearinghouse
<http://www.servicelearning.org/>

Medline Plus: Medical Encyclopedia
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<http://www.nlm.nih.gov/medlineplus/encyclopedia.html>

Medical Math Lesson Plans

<http://www.nrccte.org/resources/lesson-plans/health-science/health-science-back-basics>

Medical Mysteries on the Web

<http://webadventures.rice.edu/stu/Games/MedMyst/>

Medical Reserve Corps

<https://mrc.hhs.gov/HomePage>

MedicineNet: We Bring Doctors' Knowledge to You (Medical Dictionary)

<http://www.medterms.com/script/main/hp.asp>

MedlinePlus: Trusted Health Information for You

<http://medlineplus.gov/>

Medscape from WebMD

<http://www.medscape.com/>

Merck: A Global Research-Driven Pharmaceutical Company

<http://www.merck.com/index.html>

Transcription 411: The Online Resource Center for Medical Transcription Students and Professionals

<http://transcription411.com/>

National Institutes of Health, Office of Science Education

<https://www.nih.gov/research-training/science-education>

New England Journal of Medicine

<http://content.nejm.org/>

NORD: National Organization for Rare Disorders

<http://www.rarediseases.org/>

North Carolina Association for Biomedical Research

<http://www.ncabr.org/>

Nurse Spectrum | NurseWeek

<http://www.nurse.com/>

OncoLink: Abramson Cancer Center of the University of Pennsylvania

<https://www.pennmedicine.org/cancer/navigating-cancer-care/getting-started/patient-education/oncolink-cancer-education>

Physicians' Desk Reference

<http://www.pdr.net/browse-by-drug-name>
Pregnancy and Parenting for Today's Mom
<http://parenting.ivillage.com/>

PubMed: A service of the US National Library of Medicine and the National Institutes of Health
<http://www.ncbi.nlm.nih.gov/PubMed>

Reuters Health: The premier supplier of health and medical news
<http://www.reuters.com/news/health>

RxList: The Internet Drug Index
<http://www.rxlist.com/script/main/hp.asp>

Starla's Creative Teaching Tips
<http://www.starlasteachtips.com/>

States' Career Clusters
www.careerclusters.org

Stay Healthy
<https://www.stayhealthy.com/>

Texas Health Science
<https://www.txcte.org/>

The Educator's Reference Desk
<http://www.eduref.net/>

The Riley Guide: Employment Opportunities and Job Resources on the Internet
<https://www.myperfectresume.com/>

U.S. Public Health Service
<http://www.usphs.gov/>

Web MD
<http://www.webmd.com/>

Weil (Andrew Weil, MD) Your Trusted Health Advisor
<http://www.drweil.com/>

Wellness Web (no longer in existence)
<http://www.wellweb.com/>

Health World Online
July, 2019

<http://www.healthy.net/>

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